INSTRUCTION BOOK

MODEL ET-8040
VHF RADIOTELEPHONE EQUIPMENT

RADIOMARINE CORPORATION of AMERICA
A SERVICE of RADIO CORPORATION of AMERICA

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SECTION 1 - DESCRIPTION

. GENERAL

Model ET-8040 is a compact, multi-channel radiotelephone esigned to permit various classes of vessels to utilize the aritime-mobile frequencies allocated by the Federal Communications ommission for ship-to-ship and ship-to-shore communication in the and between 156 and 162 megacycles.

This equipment obtains crisp, clear communication by employing he principle of frequency modulation (FM) in the inherently static-ree, very high frequency (VHF) band. It provides communication on s many as eight channels in one equipment, which is small in size, ight in weight and readily installed and serviced.

Model ET-8040 is arranged for both simplex and duplex channels. implex communication employs the same frequency for transmission nd reception between ships or between ship and shore, whereas in plex communication the transmitting and receiving frequencies are parated to facilitate connections into the land telephone system.

The chart below lists the very high frequencies allocated by the Federal Communications Commission for the Maritime Mobile Service. (Also see page 6-10 for Great Lakes Vessels).

USE	TRANS. FREQ. (MC)	REC. FREQ. (MC)	1953 CHANNEL DESIGNATION (Great Lakes)	NORMALLY USED IN ET-8040 (Great Lakes)
afety-Calling	156.8	156.8	1	X
neral Intership	156.3	156.3	2	X
oast Guard Working	157.2	157.2	3	X
rt Operation	156.6	156.6	4	X
econd Intership	157.0	157.0	5	X
hird Intership	156.7	156.7	6	
g Dispatch	156.9	156.9	W	
arge Vessel Oper- ational	156.5	156.5	X	X
rries	156.4	156.4	Y	
blic Correspondence (Ship-to-Shore)	157.3	162.0	7	X
blic Correspondence (Ship-to-Shore)	157.4	161.9	8	X

See Section 6, page 6-9 for Crystal Frequencies.

The equipment is designed for operation from a Control Unit by means of push buttons which, when pressed after the handset is lifted, automatically select the proper transmitting and receiving frequencies on which communication is desired. When shipped from the factory, it is aligned to the Great Lakes frequencies, as shown in the extreme right hand column on the frequency chart above. When the handset is replaced on its cradle, the equipment automatically returns to monitoring the safety and calling frequency of 156.8 Mc (Channel 1) by loudspeaker, and either 161.9 Mc (Channel 8) or 162.0 Mc (Channel 7) by a second loudspeaker or by a bell (Radiomarine Selective Ringer, Model 27, which may be ordered as optional equipment). Either channel 7 or 8 is selected by a convenient switch on the Control Unit. To change the factory frequency alignment, proceed as outlined in Section 4, paragraph 3.

The Control Unit has individual lamps behind each channel number and their brightness is controlled by a dimmer rheostat. When monitoring channel 1 and channel 7 (or 8) with the handset hung up, these channel lamps will be brighter than the remaining channels. Upon lifting the handset, only that lamp corresponding to the channel in use is illuminated brightly. The other lamps, being dimly lighted, permit the user to shift channels in a dark pilot house without counting or feeling for the various push buttons.

The equipment is normally supplied with a press-to-talk handset for switching from receive to send, but may be connected to operate with voice controlled relays, if desired. Circuits are also provided for automatic regulation of the modulation level so that both loud and soft speakers produce strong signals with low distortion.

The control unit is equipped with VOLUME and SQUELCH controls which permit the user to readily select the desired volume when monitoring or communicating, and to silence the loudspeaker when no signals are being received. A compact, narrow design permits mounting on a partition between pilot house windows for the convenience of navigating personnel. The handset cord extends to 10 feet, permitting the user to move about in the pilot house while communicating by radiotelephone.

The transmitter-receiver cabinet may be mounted on any bulkhead space, and is arranged with a hinge to permit access to the rear of the equipment for convenience in servicing. This cabinet contains the multi-frequency transmitter, a power supply, and two complete receivers. Each assembly may be removed or replaced to expedite maintenance and service.

Small type motor generators are provided to convert the ship's 32 V DC, 115 V DC, 115 V AC or 230 V AC line voltage to 115 volts, 400 cycles which is used to power the equipment. The use of 400 cycles permits smaller and lighter rectifier and filter components to be used and makes for a more compact design. A rheostat and voltmeter are provided on the transmitter-receiver unit to permit convenient adjustment for ship line voltage variations.

The equipment utilizes an efficient VHF antenna only 55 inches high, which is easily mounted at the top of the ship's mast and connected to the equipment by means of a coaxial cable.

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TECHNICAL SUMMARY

a. General Specifications:

8 Channels, remote controlled by push buttons.

6 Simplex Channels........................ 156.3 to 157.2 Mc
2 Duplex Channels - Transmitting..... 157.4 or 157.3 Mc
Receiving........ 161.9 or 162.0 Mc

Monitoring-Automatic return when handset is replaced.

To 156.8 Mc (safety and calling).......... By loudspeaker
And 161.9 or 162.0 Mc
(public correspondence)......... By bell or loudspeaker.

Send-Receive Switching........................ Voice operated or push button.

Handset Cord .... Extends to 10 ft.

Transmitter Modulation Control .... Automatic

Power Supply.

	INPUT		OUTOUT(400 CYCLES)		FIELD
M. G. Type	Voltage	Current	Voltage	Current	RECTIFIER
MG 253P	32 DC	9 Amps	115 AC	1.22 Amps	None
MG 253P	115 DC	2.4 Amps	115 AC	1.22 Amps	None
BS 53P	115 AC (60 Cyc)	4.6 Amps	115 AC	1.22 Amps	RM-207
BS 53P	230 AC (60 Cyc)	2.3 Amps	115 AC	1.22 Amps	RM-207A

Power Drain.

32 V DC)
115 V DC) Monitoring (Standby) .... 285 Watts
Transmitting .... 350 Watts

115/230 V, 60 Cycle - Monitoring (Standby)... 317 Watts
Transmitting .... 373 Watts

Temperature Range of Operation .... -30° C to +60° C

b. Transmitter Section:

Operating Frequency Range .... 152 to 174 Mc

R. F. Power Output .... 152 to 162 Mc, 11 watts.

Duty Cycle .... 5 min. on, 15 min. off, or 10 sec. on, 20 sec. off.

Crystal Type .... Radiomarine R-10A
Crystal Frequency Range .... 4.222 to 4.833 Mc

Crystal Frequency Multiplication............. 36 times

3. TECHNICAL SUMMARY (Cont'd)

b. Transmitter Section: (Cont'd)

Frequency Stability (-30° C to +60° C)	± .002 percent
Modulation (frequency swing on either side of carrier frequency)	±15 kc for 100% modulation.
Distortion at 500 Cycles (maximum)	7% maximum.
Antenna Load Impedance	50 ohms up to 2:1 SWR
Audio Input Impedance	120 ohms
Spurious Emission (minimum attenuation below carrier level).	
1. At any Frequency	60 db
2. In 152 to 162 Mc Band	80 db
Audio Limiting Range	20 db
Audio Response (relative to true phase modulated signal)	+1 -3 db, 300-3000 CPS
Microphone	Single-button carbon.

c. Receiver Section:

Receiver "A"	Channels 1 through 6
Receiver "B"	Channels 7 and 8
Type of Circuit	Double Superheterodyne.
Crystal Type	Radiomarine R-9A
Crystal Frequency Range	10.71428 to 12.2857 Mc.
Crystal Frequency Multiplication	2 X (2nd mixer) 12 X (1st mixer)
Crystal Stability (-30° C to +60° C)	±.002 percent
Intermediate Frequencies	23.4 to 27.6 Mc IF_1, and 2 Mc IF_2
Selectivity	100 db down, 60 kc off resonance
Sensitivity	0.9 - 1.2 microvolt maximum for 20 db noise quieting.

TECHNICAL SUMMARY (Cont'd)

. Receiver Section: (Cont'd)

Squelch Sensitivity	0.25 microvolt min. to approx. 5.0 microvolt maximum setting.
Audio Characteristics (relative to true phase modulated signal)	+1 -6 db, 300 to 3000 CPS
Audio Output	0.8 watt with 1 microvolt signal modulated ±15 kc at 1000 CPS.
Output Impedance	3 ohms
Antenna Input Impedance	50 ohms

. Tube Complement:

Type	6BH6	6AQ5	2E26	12AX7	6AV6	6AL5	6AK6	12AT7
Transmitter	5	1	2		2			1
Receiver "A"	11			2		1	1	
Receiver "B"	11			2		1	1	

. Dimensions and Weight:

	Width	Height	Depth	Pounds
Transmitter-Receiver	16-3/4"	23-3/4"	6-3/4"	72
Control Unit	4-1/2"	15"	3-1/2"	7
"A" and "B" Speaker	6-1/2"	6"	4"	3
Selective Ringer	7-3/4"	13-3/8"	5"	13-1/2
Motor Generator	15"	12"	8"	83
Antenna	---	55"	---	3
Field Rectifier Unit-RM-207A (115/230 V AC Line Inputs only)	7"	9-1/8"	3-5/8"	7-1/2

SECTION A
CONDENSED OPERATING INSTRUCTIONS

1. TO START EQUIPMENT

Place POWER switch, located at the transmitter-receiver unit, in the ON position. After 30 seconds adjust knob located above the POWER switch so that it reads 115 volts on meter (handset should be in cradle at CONTROL UNIT).

2. TO MONITOR TWO CHANNELS BY LOUDSPEAKER

With the handset hung up, channel 1 and either channel 7 or 8 are being monitored as indicated by the illuminated channel indicators. The brilliance of the channel indicators can be set to the desired level by adjusting the DIMMER control on the CONTROL UNIT.

To adjust channel 1 controls, turn SQUELCH control on CONTROL UNIT to maximum counter-clockwise position and adjust VOLUME control so that incoming signals or noise are heard at an adequate level. During periods when no signals are heard, turn SQUELCH control clockwise until background noise just ceases. Do not turn SQUELCH control past this point or weak signals may not be heard.

Select either channel 7 or 8 on the CONTROL UNIT using the knob located adjacent to these channel indicators. Then adjust the VOLUME and SQUELCH controls on loudspeaker "B" unit in the same manner as explained in the second paragraph for the CONTROL UNIT.

3. TO RECEIVER CALLS BY SELECTIVE RINGER

Select either channel 7 or 8, as required, on the CONTROL UNIT with the knob adjacent to these channel indicators. Bell will ring when ship is called.

4. TO PLACE CALLS

Removing handset from cradle automatically silences both loudspeakers, and only the channel 1* receiver is heard in the earphone. If another channel is desired, depress the push-button for this channel and held down until this channel indicator is illuminated, then release push button. Before talking listen on the channel selected to make sure it is not in use. When contact with the other party is made, adjust VOLUME control on CONTROL UNIT for proper level.

If a call is received on the selective ringer channel, remove handset from cradle and depress push button adjacent to illuminate indicator (channel 7 or 8)

To transmit, talk into the handset in a normal tone of voice. If the equipment is provided with a push button on handset, depress button to talk and release when listening.

*NOTE: On the Great Lakes, channel 1 (156.8 Mc) is normally set to originate both ship-to-ship and ship-to-shore calls. After contact has been established on channel 1, the normal procedure is to switch to a "working" channel to complete the call. The party originating the call designates the "working" channel.

5. COMPLETION OF CALL

When call is completed, replace handset in cradle and readjust controls as explained in 2 and 3 above.

6. TO STOP EQUIPMENT

Place POWER switch located at the transmitter-receiver unit in the OFF position.

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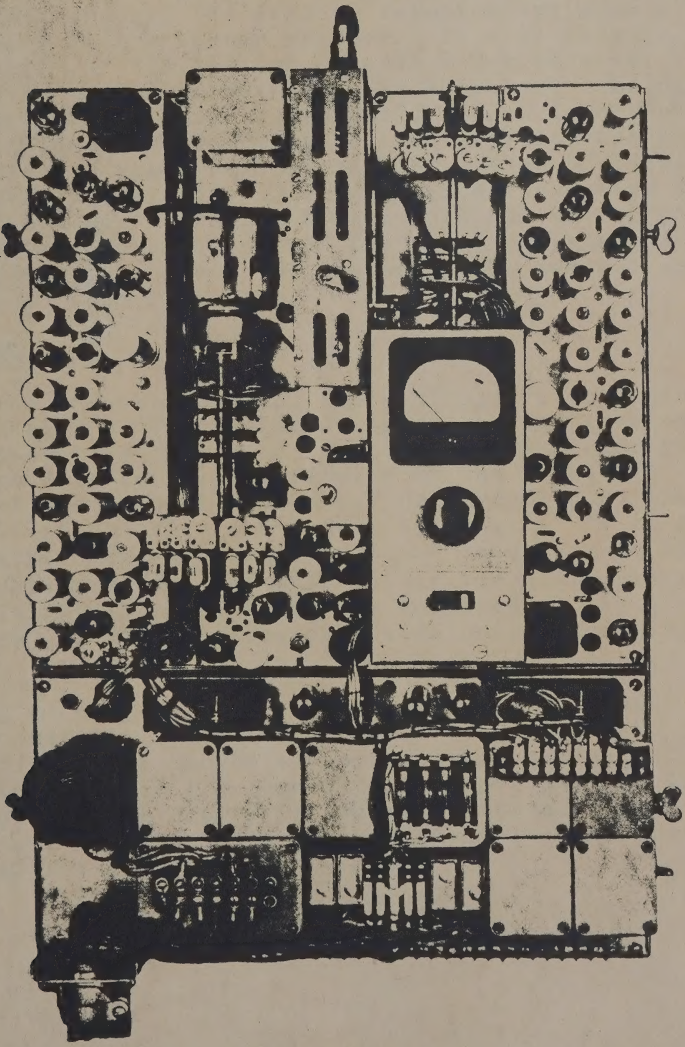

Figure 2-Transmitter-Receiver, Cover Removed

SECTION 2
OPERATION

1. GENERAL

Operation is normally centered at the control unit, but starting the motor generator must be done at the transmitter-receiver. To start, move the POWER **switch** to the ON position. Allow time for the tubes to heat up (about 30 seconds) and then adjust the knob above the POWER switch so that the meter reads 115 volts. The equipment is now ready to send and receive calls.

2. TRANSMITTING

To place a call, remove the handset from its cradle. Then push the button of the channel on which it is desired to transmit. The button must be held down for a few seconds. If the button is not held down long enough, the channel selector switches will not have time to rotate to the chosen channel. It will then be necessary to push the button of the desired channel a second time. (The brightest lamp indicates which channel has been selected). Before making a call, be sure the channel is not busy. Speak into the handset mouthpiece.The equipment will automatically transmit when you talk, and return to receive when you stop talking. When speaking into the handset, use a normal tone of voice. Either shouting or whispering will cause improper operation of the automatic switching circuit (vodas). On equipment furnished for press-to-talk operation, it will be necessary to press the button on the handset when talking, and to release when listening.

3. RECEIVING

With the handset hung up, the equipment is on channel 1 and either channel 7 or 8 as selected by the bottom knob on the control unit. Channel 1 is monitored by the "A" loudspeaker unit, while channel 7 or 8 is normally monitored by the selective ringer. Optionally, either channel 7 or 8 may be monitored by the "B" loudspeaker unit rather than the selective ringer. If it is desired to listen on any other channel, it will be necessary to lift the handset and momentarily depress the push-button for that channel. In such a case, reception will be through the earpiece of the handset. Selective ringer or "B" loudspeaker are operative only on standby.

During standby when a call is received on channel 1, it will be heard on the "A" loudspeaker unit. To answer this call, remove the handset from its hanger and speak into the mouthpiece. Should the bell ring or a call be heard on the optional "B" loudspeaker unit, note whether channel 7 or 8 is being monitored. Lift the handset, then momentarily depress the correct channel push-button and speak into the handset mouthpiece.

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When on standby, the VOLUME control on the front panel of the control unit may be used to vary the output of the "A" receiver, while the VOLUME control on the "B" loudspeaker unit may be used to vary the output of the "B" receiver. When the handset is removed from its hanger, the control unit VOLUME control is used to adjust the output of whichever receiver is being used. When connected to the selective ringer, the "B" receiver volume cannot be varied while the equipment is on standby.

The SQUELCH controls are operative only when on standby. The SQUELCH control located on the front panel of the control unit is for the "A" receiver, while the SQUELCH control on the "B" loudspeaker unit is for the "B" receiver. When connected to the selective ringer, the "B" receiver squelch cannot be varied.

To adjust the squelching level, first adjust the VOLUME control to the desired level. Then during a no signal period, rotate the SQUELCH control clockwise until background noise just ceases. Do not set the SQUELCH control too far clockwise or weak signals may not be heard.

SECTION 3
CIRCUIT DESCRIPTION

1. TRANSMITTER (Drawing G-114)

The circuits employed in the ET-8040 equipment involve frequency multiplication to obtain the operating frequencies. Reference should be made to the following test and to the schematic diagrams, for complete circuit details.

To develop the output frequency of 152 to 174 Mc the transmitter utilizes crystals with a fundamental frequency between 4.222 and 4.333 Mc and multiplies this frequency through two tripler and two doubler stages to obtain the 36th harmonic. To calculate crystal frequency, divide the carrier frequency by 36. There are eight crystals (Y-101 to Y-108) and a trimmer capacitor for each crystal (C-173 to C-180). Switch S-101 connects the selected crystal and trimmer into the oscillator circuit. The crystal is connected to V-101 to form a Pierce oscillator with the output fed to the phase modulator, V-102, and amplifier, V-103. The variable capacitor in the crystal circuit provides a frequency variation of ±0.005 percent and allows the oscillator to be set exactly on frequency.

The modulator tube, V-102, is connected in a special circuit that employs Z-101 and C-105 to provide a maximum phase swing of nearly ±90° without requiring tuning adjustments. The audio potentials are applied to the grid of V-102 to develop this phase shift with no change in amplitude of the oscillator output.

The resultant frequency band developed by the modulating effect of V-102 is fed through V-103 to the two cascaded tripler stages V-104 and V-105.

The output of V-105, now in the 38 to 43 Mc range, is fed to doubler stages V-106 and V-107 to obtain the channel frequency within the 152 to 174 Mc band. All coupling circuits between the multiplier stages are double tuned to reject spurious frequencies.

Series tuning is used in the input to V-108 to permit the use of sufficient inductance in L-107 to provide adequate coupling to L-106. At the frequencies in use, the input capacity of V-108 would require too small an inductance with parallel tuning.

To reduce spurious radiations a band-pass and a low-pass filter network are used to couple the output of V-108 to the antenna. The first network resonates the plate and includes a shunt coil L-110 primarily used to trap out the unwanted half-frequency. The second filter is adjusted to obtain proper antenna loading.

The power amplifier circuits are neutralized by C-133, connected between the screen grid and cathode, to prevent free oscillation.

A series of jacks, J-101 to J-105, in the grid circuits of the various tubes, permit checking the grid drive on the tubes during tuning procedures. Another jack, J-107, permits checking of plate current in the power amplifier.

In the modulation circuits, the microphone signal from T-103 is fed to the grid, pin 1, of the first limiter tube, V-109, which in turn is cathode coupled to the second limiter tube V-110. This arrangement limits both the positive and negative peaks of the microphone voltage. When the positive peaks are too high, increased current through the cathode resistor, R-128, drives the second tube to cutoff. If the negative peaks are too high, cutoff is established in the first tube due to the bias across R-128 and the signal.

Distortion is held to a minimum by means of a filter, R-129 and C-140. This circuit also improves the overall frequency response.

Output from the limiter is across the potentiometer R-124. The modulation level (maximum carrier frequency swing) is established by the setting of this potentiometer. The voltage from R-124 is fed to the grid of the phase modulator V-102 whose output modulates the carrier.

Resistors R-141 and R-142 form a voltage divider across the secondary of the microphone transformer T-103. The voice signals from this divider are coupled to the grid of the first section of the vodas tube V-111. Speech applied to the grid of this tube section is amplified and applied to the R-C network consisting of R-135 and C-164 to C-169. The second half of the vodas tube V-111 is normally conducting heavily. The vodas relay K-103 being in the plate circuit of this tube section is normally operated. The speech signals charge capacitors C-164 to C-169, cutting off the second section of V-111. This causes the vodas relay K-103 to release and apply ground to one side of antenna relay K-101. Relay K-101 operates switching B+ from the receiver to the transmitter thus keying the transmitter.

After speech input has ceased, capacitors C-164 to C-169 discharge through resistor R-135. Until the capacitors have discharged sifficiently, the second section of V-111 remains cut off and the transmitter remains keyed. When the negative voltage on the grid has risen sufficiently, this tube section conducts, the vodas relay operates and the equipment returns to receiving. In this way the equipment will continue to transmit during the slight pause between words, but will return to receiving during longer pauses. This hang-over time may be shortened by removing one or more of capacitors C-164 to C-169. Adjusting potentiometer R-133 varies the sensitivity of the vodas circuit by changing the speech input to the vodas tube.

When press-to-talk operation is used, the ground on the vodas relay armature is controlled by the handset push button. In this case the vodas tube V-111 has been removed and the vodas relay is always released. Pressing the handset button applies ground, through switch hook S-610 and the vodas relay, to operate relay K-101 thus keying the transmitter. For suppression of sparks, resistor R-149 and capacitor C-183 are placed across the contacts of the vodas relay K-103. For test purposes, the transmitter may be keyed by closing switch S-102. This switch operates the antenna changeover relay K-101 by applying ground to one side of its coil.

2. RECEIVERS (Drawing G-110 and G-115)

The ET-8040 equipment employs two separate receivers. Receiver "A" tunes to channels 1 through 6, while receiver "B" tunes to the higher frequency channels 7 and 8. In both receivers the frequency change from one channel to another is accomplished by switching crystals and crystal trimmer capacitors. In receiver "A" the switching is accomplished by switch S-201, while in receiver "B" the switching is done by relay K-301.

The following description will be of the "A" receiver. A description of the "B" receiver would be the same, except the symbol numbers would be in the 300 series rather than the 200 series.

The receiver employs two stages of R. F. amplification and a double conversion superheterodyne circuit. The heterodyning frequency for the second mixer tube, V-205, is obtained from an oscillator-doubler tube, V-215, which is controlled by crystal, Y-201 to Y-206, having a fundamental frequency (suited to the signal frequency to be received) between 10.71 and 12.28 Mc. A portion of the output of the oscillator-doubler V-215 is fed to V-214 and the frequency multiplied six times to provide the heterodyning voltage for the first mixer tube, V-203

The crystal frequency for any signal frequency may be calculated as follows:

$$F_c = \frac{F_s - 2000 \text{ kc}}{14}$$

F_c = Crystal Frequency in kc

F_s = Signal Frequency in kc

The incoming signal is fed into the cathode of the first R. F. amplifier, V-201, through a tap on L-201. The tube is connected as a triode and operates with automatic volume controlled bias on the grid. The signal is fed to the second R. F. amplifier, V-202, and then to the first mixer tube, V-203. AVC voltage for V-201 and V-202 grids is derived from the input to the second I. F. amplifier, V-207.

After mixing in V-203 with the frequency from V-214, the signal frequency is converted to the 23.4 to 27.6 Mc range. After amplification at this frequency in V-204, the signal frequency is mixed again with the heterodyning frequency from V-215 in the second mixer tube, V-205, and converted to a signal whose center frequency is 2 Mc. At this frequency the signal is fed through two stages of I. F. amplification formed by V-206 and V-207, which are each coupled by three double-tuned transformers, to provide extremely high selectivity, and then to two limiter stages, V-208 and V-209

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The signal is then fed into the discriminator tube, V-210, and deviations from carrier frequency in accordance with the modulation appear as changing audio potentials across capacitor C-286. The audio currents are coupled through C-266 to the voltage divider, R-256 and R-259. The outnut of this divider is coupled through C-215 to the first audio amplifier section of V-212, pins 6, 7 and 8.

The triode section of V-212 formed by pins 1, 2 and 3 in conjunction with the noise rectifier, V-211, acts as the squelch con trol for the amplifier as follows.

In the absence of a signal, the second limiter V-209 is saturated with noise. The noise voltage is coupled through the discriminator transformer Z-216 to the discriminator tube V-210, then through C-259 to the noise amplifier rectifier, dual triode tube V-211. The first triode of V-211 amplifies the noise voltage from the discriminator. Noise output from the first triode is coupled to the diode connected second triode in a manner which causes a positive voltage to appear at the top of R-246.

The voltage at R-246 is applied to the grid, pin 2, of the audio amplifier and squelch control tube, V-212. This causes plate current flow in the squelch control section of the tube, which reduces the voltage on the grid at pin 7 below the positively biased cathode at pin 8. Under this condition, the first audio amplifier section is biased to cutoff, rendered non-conducting and the receiver is silenced during no-signal periods.

A signal strong enough to quiet the noise in V-209 will cause the squelch circuit to open by reducing positive bias on the squelch control tube. The point at which the squelch circuit functions may be set by the squelch control (potentiometer R-613) located in the control unit.

With the squelch circuit open, the audio signals are coupled to the audio output tube V-213 and then through output transformer T-213 to the volume "L" pad R-614 in the control unit.

Test jacks J-201, J-202, J-203 and J-204 are mounted on the chassis to permit the checking of crystal frequency and discriminator centering, grid drive on multiplier V-214, input to second limiter V-209, and input to the first limiter V-208, respectively.

3. POWER SUPPLY (Drawing G-119)

The power supply for this equipment is quite complex. When on standby, +200 volts is needed for two receivers and the selective ringer. With the handset up, +200 volts is needed for only one receiver; and when keyed the +200 volts and +310 volts are required for the transmitter. Besides these voltages, 24 volts is necessary for channel indication and switching. Three separate power supplies furnish these voltages in the manner described below.

Selenium rectifier SE-401 supplies +24 volts. This operates the Ledex solenoids S-101 and S-201, the channel indicator lamps, relays K-401 - K-101 and K-301, the bell of the selective ringer, and also supplies microphone voltage.

The output of receiver power supply rectifier V-401 is +200 volts. On transmit this +200 volts is the plate and screen supply for all transmitter tubes, except the P. A. and second doubler plates. When on standby, V-401 is the B+ supply for receiver "A". With the handset removed from its hanger and the equipment on receive, this +200 volts is switched to whichever of the receivers is in use. In addition, B+ for the squelch and the first R. F. stage of both receivers is at all times supplied from this power supply.

The high voltage power supply has a variable output voltage. To furnish B+ for the "B" receiver and the selective ringer, the output voltage of rectifiers V-402 and V-403 (when on standby) is +200 volts. When the handset is removed from its hanger, relay K-401 operates. Operation of this relay changes the input taps on transformer T-405. As a result of this the output voltage of rectifiers V-402 and V-403 rise to +310 volts. This voltage is fed to the plates of the P. A. V-108 and second doubler V-107. It is used also as a restoring voltage for the selective ringer.

When relay K-401 operates, not only does it switch taps on transformer T-405, but it also switches the phase correction capacitor C-407 across the AC line. This improved the voltage regulation of the motor generator. The negative side of this power supply is grounded through resistor R-401. This makes the negative side 13 volts below ground. This -13 volts is used as P. A. grid bias.

Transformers T-402, T-403 and T-404 furnish 6.3 volts to the "A" receiver filaments, "B" receiver filaments and V-402 and V-403 filaments, respectively. The filament transformer for the transmitter is T-101 located on the transmitter chassis.

A test handset jack is provided on the power supply chassis. Plugging into this jack cuts off the control unit handset and inserts the test handset into the talking and receiving circuits.

A fuse board mounted on top of transformer T-405 contains a fuse for each separate power supply and for the filament transformers. The transmitter filaments are not fused separately.

A motor generator is used to convert the ship's power to the required 115 volts, 400 cycle AC. Machines are available for 115/230 volts, 60 cycle AC, and 32 and 115 volts DC input. A filter unit is provided for all types of input voltage. The filter unit is connected to the input and output of the motor generator. For controlling the application of power, the input is run through the POWER switch on the meter panel. The output voltage is adjusted by varying potentiometer R-501, which is in series with the alternator field. This potentiometer is located on the meter panel. The output is fused at the machine while the input is fused at a separate switchbox.

The alternator field for the 115/230 volt machine is supplied from a selenium rectifier, an auto-transformer (T-1001) being required for 230 volt AC operation. The output voltage of this motor generator is adjusted by varying potentiometer R-501, but in this case the potentiometer is in series with the AC input to the rectifier.

Input to the selenium rectifier SE-1001 is 115 volts AC. When the AC line is 230 volts, the lead on terminal 2 of terminal board TB-1003 is moved to terminal 1. This connects auto-transformer T-1001 in the circuit and thus supplies the required 115 volts to rectifier SE-1001.

4. CONTROL SWITCHING AND INDICATOR CIRCUITS

Various switching functions are accomplished by switch hook S-610. With the handset removed from its hanger, ground is connected through S-610 to the armature of vodas relay K-103 and +24 volts is connected to the push buttons and relay K-401. Hanging up the handset removes this ground and transfers +24 volts from the push buttons and relay K-401 to the standby homing circuit. This action also transfers the receiver audio output from the handset voltage divider, R-616 and R-615, to the "A" loudspeaker unit.

With the handset lifted, +24 volts is connected through the switchhook to operate relay K-401. Operation of this relay performs the following functions:

a. Switches primary taps of transformer T-405 so that output of H. V. power supply changes from +200 volts to +310 volts.

b. Connects a 1 mfd capacitor C-407 across the AC line.

c. Removes +200 volts from the ringer and "B" receiver.

d. Applies +310 volts to the plates of the final transmitter stages and to the ringer as a restoring voltage.

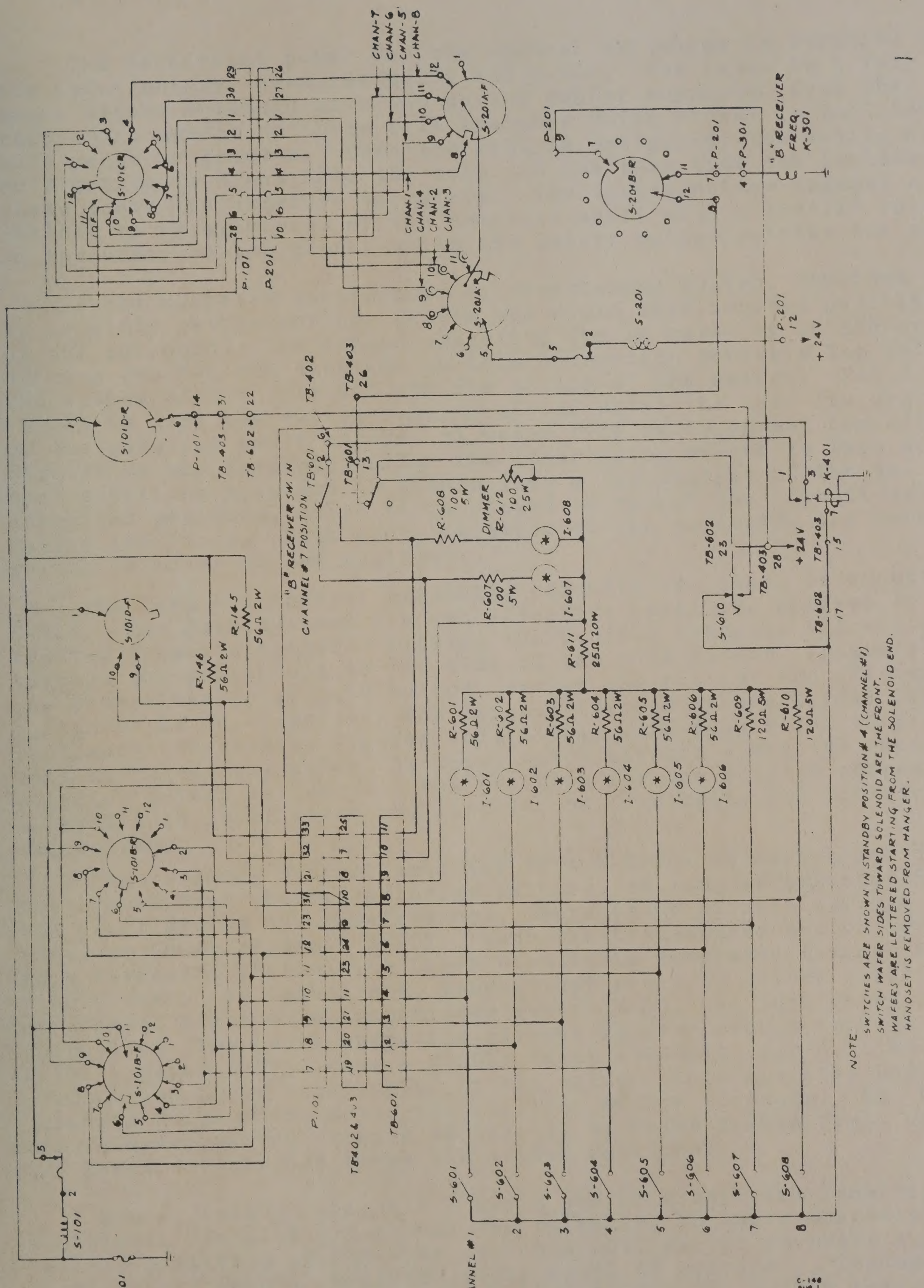
e. Disables the "A" receiver.

f. Opens the "A" receiver squelch control by removing its ground.

g. Removes the "B" receiver audio output from the selective ringer or loudspeaker, and completely opens the squelch by ungrounding R-901.

h. Applies the "B" receiver audio output to the "A" receiver so that it is available for switching to the handset.

i. Transfers the channel 7 and 8 indicator lamp circuit from the "B" receiver standby selector switch to the transmitter channel switch S-101.


F-101
S-101
S-101B-F
S-101B-R
S-101C-R
S-101D-R
S-101D-F
R-146 56Ω 2W
R-145 56Ω 2W
P-101
P-201
TB402 & 403
TB-601
P-101 14
TB-403 31
TB 602 22
TB-402
TB-403 26
"B" RECEIVER SW. IN CHANNEL #7 POSITION
TB-601 12
TB-601 13
R-608 100 5W
DIMMER R-612 100 25W
I-608
R-607 100 5W
I-607
R-611 25Ω 20W
R-601 56Ω 2W
R-602 56Ω 2W
R-603 56Ω 2W
R-604 56Ω 2W
R-605 56Ω 2W
R-606 56Ω 2W
R-609 120Ω 5W
R-610 120Ω 5W
I-601
I-602
I-603
I-604
I-605
I-606
S-601
S-602
S-603
S-604
S-605
S-606
S-607
S-608
CHANNEL #1
2
3
4
5
6
7
8
CHAN-7
CHAN-6
CHAN-5
CHAN-8
CHAN-1
CHAN-4
CHAN-2
CHAN-3
S-201A-F
S-201A-R
S-201B-R
S-201
P-201 12
+24V
P-201
P-201
P-301
"B" RECEIVER FREQ. K-301
K-401
TB-602 23
TB-403 28
+24V
TB-403 15
TB-602 17
S-610
C-148 SUB-1

NOTE
SWITCHES ARE SHOWN IN STANDBY POSITION #4 (CHANNEL #1)
SWITCH WAFER SIDES TOWARD SOLENOID ARE THE FRONT.
WAFERS ARE LETTERED STARTING FROM THE SOLENOID END.
HANDSET IS REMOVED FROM HANGER.

Figure 7 - Channel Switching & Control Circuits, Schematic

The mechanical power for the channel switching is supplied by the Ledex rotary solenoids S-101 and S-201. The Ledex is a very short stroke solenoid with the moving member supported from the stationary member on three ball bearings which travel in inclined ball races or grooves. When the coil is energized, the moving member or armature is drawn into the coil at the same time the inclined ball races cause the armature to rotate. The inward motion engages a ratchet on an extension of the armature shaft with a similar ratchet on the wafer switch shaft, while the rotary motion rotates the switch.

A cam operated interrupter or commutating switch, combined with an armature return spring, causes the rapid self-imposed oscillation of the solenoid. The switch operating cam is moved by an arm on the driving ratchet and backlash in this connection causes a lag between the action of the solenoid and the action of the switch. The final result is that the switch remains closed until the last few degrees of the solenoid power stroke, at which time it is opened breaking the circuit to the solenoid coil. The interrupter switch is then held open until the solenoid is within just a few degrees of the de-energized position, where it is closed to "make" the circuit and repeat the cycle. With each operation of the solenoid, the wafer switch is advanced one position.

The lamp and channel switching circuits are shown on drawing C-148. The push buttons are not effective until the handset is removed from its hanger. Lifting the handset connects +24 volts through the switchhook to one side of the push button. Depressing any channel selector push button, except the one for the channel the equipment is on, completes the circuit through wafers S-101B front - the Ledex interrupter - Ledex coil S-101 - and fuse F-101 to ground. This energizes the Ledex solenoid, which in turn steps the channel selector switch around. At the position for the desired channel wafer S-101B front opens the circuit and thus halts the rotation of the switch.

The receiver channel selector switch S-201 is controlled by the transmitter channel selector switch. As long as switches S-101 and S-201 are on the same channel, there is no circuit through the receiver Ledex solenoid S-201. When the transmitter switch moves to a different channel the Ledex circuit is completed through wafer S-101C rear. To illustrate, assume that receiver switch S-201 is on channel 5 and that transmitter switch S-101 has just moved to channel 6. The Ledex operating circuit is from ground through fuse F-101 - wafer S-101C rear - S-201A front - S-201A rear - Ledex coil S-201 - and Ledex interrupter to +24 volts. This operates Ledex solenoid S-201 which moves the receiver switch to channel 6. When the receiver switch arrives at channel 6, wafer S-201A front opens the Ledex circuit and stops the switch rotation.

Since receiver channels 7 and 8 are on a separate receiver, additional circuits are needed for switching to these channels. For all positions of receiver switch S-201, except channels 1 and 8, receiver "B" channel selector relay K-301 is operated. The operating path of this relay is through terminal 7 of wafer S-201B rear. When switch S-201 is on channel 8, wafer S-201B rear opens the operating circuit of K-301.

When the equipment is on standby, relay K-301 is controlled by receiver "B" standby selector switch S-609 in the control unit. In this case the operating path through terminal 7 of wafer S-201B rear is open, therefore the circuit is completed from +24 volts through switch S-609 - terminal 12 of wafer S-201B rear - and relay K-301 to ground. With switch S-609 in the channel 7 position, relay K-301 is operated. The relay releases when switch S-609 is changed to the channel 8 position.

The operation and release of relay K-301 switches the proper crystal and trimmer capacitor into the receiver "B" oscillator circuit. Besides the switching of crystals and trimmers, B+ must be switched to the "B" receiver. When the equipment is on channels 1 through 6, +200 volts is connected to receiver "A" through wafer S-201E rear. For channels 7 or 8, B+ is switched to the "B" receiver through wafers S-201E rear and S-201D rear. Whenever the transmitter is keyed, the antenna transfer relay K-101 switches receiver B+ to the transmitter. On standby, the receiver B+ is supplied to the "A" receiver, while B+ for the "B" receiver comes from the H. V. power supply through relay K-401 and wafer S-201D rear.

When the handset is hung up, switchhook S-610 completes a circuit from 24 volts through wafer S-101D rear - the Ledex interrupter - Ledex coil S-101 - and fuse F-101 to ground. This operates the Ledex solenoid S-101 which in turn rotates switch S-101 to the standby position (channel 1). The receiver switch S-201 follows the transmitter switch as explained previously.

By switching resistors, the indicator lamp for the channel in use is made to glow the brightest. For example, the channel 2 lamp circuit, when the equipment is on channel 1, is from +24 volts through DIMMER R-612 - resistor R-611 - resistor R-602 - lamp I-602 - wafer S-101 - Ledex interrupter - Ledex coil S-101 - and fuse F-101 to ground. When the equipment is changed to channel 2, wafer S-101B front becomes ineffective, while wafer S-101B rear controls the lamp brilliance. With the equipment on channel 2, the channel 2 lamp circuit is that shown on drawing A-195. Comparison of this circuit with the circuit described above shows that the 25 ohm resistor R-611 has been replaced by the parallel combination of I-601 and R-601, I-603 and R-603, I-604 and R-604, I-605 and R-605, I-606 and R-606, R-609 and finally R-610. This combination has a lower resistance than R-611 and, consequently, the channel 2 lamp is brighter. This arrangement is used on channels 1 through 6.

With the handset lifted and the equipment on channel 1, channel 8 lamp circuit is from +24 volts through DIMMER R-612 - lamp I-608 - resistor R-608 - resistor R-146 - Ledex interrupter - Ledex coil S-101 - and fuse F-101 to ground. When the equipment is changed to channel 8, wafer S-101D shorts out resistor R-146, thus increasing the brilliance of lamp I-608.

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When the equipment is on standby, switch S-101 is in the channel 1 position making the channel 1 lamp brighter. In this case either the channel 7 or 8 lamp must also be brighter. Wafer S-101D front cannot be used for resistor switching as is done in the operate condition because now switch S-101 is stationary on channel 1. The release of relay K-401 on standby overcomes this difficulty by closing a shorting path through switch S-609 and wafer S-101B front. Thus when switch S-609 is in the channel 7 position, it shorts resistor R-145, making the channel 7 lamp brighter. When in the channel 8 position, switch S-609 shorts resistor R-146 making the channel 8 lamp brighter.

Drawing A-196 shows the audio output switching circuits. When on standby the output of receiver "A" is from transformer T-213 to wafer S-201C rear, VOLUME control R-614, test handset jack J-404, and switchhook S-610 to the "A" loudspeaker LS-801. At the same time the output of the "B" receiver is from transformer T-313 to relay K-401 and to transformer T-201 in the selective ringer. If the optional "B" loudspeaker unit is used instead of the selective ringer, the "B" receiver audio output is to VOLUME control R-902 and loudspeaker LS-901. With the lifting of the handset, relay K-401 operates and transfers the "B" receiver output to terminals 4 and 5 of wafer S-201C rear. For channels 1 through 6 the output of receiver "A" is applied by wafer S-201C rear to VOLUME control R-614. For channels 7 and 8, wafer S-201C rear applies the output of receiver "B" to VOLUME control R-614. Additionally, lifting the handset switches the audio output from the "A" or "B" loudspeakers to voltage divider R-615 and R-616 across the handset receiver. Plugging a test handset into jack J-404 transfer the audio output from either receiver to the test handset.

5. SELECTIVE RINGER (Drawing K-912)

Model ET-8040 equipment uses a model 27 selective ringer as a ringing unit in the two-tone audio-frequency selective signal-system. The selector set performs the local function of closing a bell circuit when actuated by the proper sequence of audio frequency signals. These signals consist of pulses of 600 and 1500 cycle modulation which are alternated at a rate of 4 to 5-1/2 cycles per second. The selective ringer may be arranged to respond to any one of a number of five digit codes so that the selective signalling of any one of a group of stations operating on the same carrier frequency is possible.

3. INITIAL ADJUSTMENTS

SAFETY WARNING

THE VOLTAGES USED IN THIS EQUIPMENT ARE DANGEROUS, AND CONTACT WITH ENERGIZED PARTS MAY PROVE FATAL. OBSERVE ALL SAFETY RULES.

NOTE

Under the FCC ruling, all tuning adjustments on the transmitter must be made by, or under the supervision of, a holder of a SECOND CLASS or higher Radiotelephone Operator's license.

Both the transmitter and receiver "A" are aligned at the factory to 156.8 Mc. This frequency is normally the center of the band (156.3-157.4 Mc). To add or change a particular frequency insert the new crystal in the proper crystal holder and adjust the associated crystal trimmer capacitor to the proper frequency as explained below under a.(2) and b.(1).

Receiver "B" is aligned at the factory to 162.0 Mc. If it is desired to monitor a channel in the 156.3-157.4 Mc band with this receiver, it will be necessary to realign the high IF's and RF's of this receiver for a signal frequency of 156.8 Mc. See section 6, pages 6-3 and 6-4. The proper crystals are then installed in this receiver and tuned as explained in the paragraph above.

All adjustments are made at the factory to within ±30 cycles of the frequency of the crystals specified by the customer, and the only adjustments that should be necessary are antenna loading, P. A. tuning, and a frequency check using the customer's monitoring equipment. The equipment required for making these adjustments is as follows:

Insulated screwdriver.
0-100 ma DC meter.
Set of test leads fitted with phone plug
(must be insulating sleeve type).
VoltOhmyst or any multi-range voltmeter with a sensitivity
of at least 20,000 ohms per volt.
Frequency meter ±.001% accuracy.

Before making the adjustments it will be necessary to remove the transmitter-receiver cover. It is removed by releasing the five screw fasteners and pulling forward.

a. Transmitter:

(1) Antenna Loading - Set the antenna loading capacitor C-137 at maximum capacity (extreme counter-clockwise position, minimum loading). Connect the milliammeter to the P. A. plate jack J-107, which is located on the top end of the transmitter chassis. Turn on the power, remove the handset from its hanger, switch the equipment to channel #1 and set the TRANSMITTER TEST switch to ON.

WARNING

APPROXIMATELY 310 VOLTS IS APPLIED TO METER LEADS WHEN PLUG IS INSERTED IN J-107. AVOID CONTACT WITH LEADS OR METER TERMINALS WHILE POWER IS ON THE EQUIPMENT.

Adjust C-136 to obtain minimum plate current and then adjust C-137 until the plate current increases to approximately 80 ma. A small field intensity meter, if available, will facilitate making this adjustment. Set the meter to quantitatively measure the emitted signal and adjust C-137 and and C-136 to obtain a maximum meter indication with a plate current of 80 ma.

It will be noted that slightly more power output is obtained with C-136 rotated clockwise (less capacity) past the minimum plate current indication. This is the best position for C-136 and gives maximum P. A. efficiency.

(2) Frequency - A frequency meter with an accuracy of at least ±.001% must be used for checking the frequency of the transmitter. Do not use a station receiver! There is no assurance as to the accuracy of the station receiver's tuning and, since this equipment will work with many receivers, it must be tuned as close as possible to nominal frequency.

The transmitter has been adjusted to frequency at the factory. After installation if it is no longer on frequency, each channel may be adjusted to the correct frequency by its crystal trimmer capacitor (C-173 to C-180). Adjust the appropriate capacitor (see drawing RS-264) in small steps, measuring the frequency after each adjustment, until the correct frequency is reached.

(3) Vodas - The vodas adjustments are made at the transmitter-receiver unit while speaking into the handset. The control unit handset may be used if it is located within 10 feet of the transmitter receiver. With greater separation, a test handset is necessary. To use the test handset, first remove the control unit handset from its hanger and switch the equipment to an idle channel. Leaving the control unit handset off the hanger, go to the transmitter-receiver unit and plug the test handset into jack J-404. This switches the audio circuits from the control unit handset to the test handset.

Set the vodas sensitivity control (see drawing RS-264) to the maximum counter-clockwise position. Then while speaking into the handset, in a normal speaking tone of voice, rotate the sensitivity control clockwise until the vodas relay operates consistently with speech input but does not operate from normal pilot house noise. Vodas relay operation is indicated by cut off of noise in the handset receiver and an audible click from the relay itself. Also relay operation may be observed through the plastic cover.

If the vodas relay does not release rapidly enough after the cessation of speech input, disconnect one or more of capacitors C-164 to C-169. This hangover time should be such that the vodas relay will remain operated between the words of a sentence, but will release upon a more lengthy pause. Capacitors C-164 to C-169 are of the ceramic disc type and are mounted on a small terminal board in the center of the back of the transmitter chassis. If the equipment is to be used for push-button rather than vodas operation, remove the vodas tube. Also remove jumper between terminals 26 and 27 of TB-602 in CONTROL UNIT, and change handset (HS-601) to Western Electric Type F3-AW3 which is equipped with push-button. If the equipment was originally supplied with the above handset, connect green wire to handset switch button and terminal 27 of TB-602 (See drawing G-119).

b. Receiver: Connect the voltmeter to J-203 (J-303) or J-204 (J-304), and adjust Z-202 (Z-302) for peak response. This adjustment must be made for maximum noise quieting while receiving a weak signal on channel #1 for receiver "A" and channel #7 for receiver "B".

If the receiver should be operated where severe intermodulation spurious response is received from two interfering signals, considerable improvement will result when the AVC voltage on tubes V-201 (V-301) and V-202 (V-302) is taken from the grid circuit of V-208 (V-308). This is accomplished by removing one end of R-221 (R-321) from terminal 2 on Z-213 (Z-313) and connecting it to the junction of C-249 (C-349) and R-240 (R-340). This may result in a slight reduction to receiver sensitivity.

Plug a VoltOhmyst or 20,000-ohm-per-volt meter into the discriminator jack J-201 (J-301). Adjust the bottom core of discriminator transformer Z-216 (Z-316) for zero meter reading when a signal is not being received.

(1) Frequency - Do not use the signal from a station transmitter to tune the receiver. There is no assurance as to the accuracy of the transmitter tuning and, since this equipment will work with many transmitters, it must be tuned as close as possible to the nominal frequency.

The receivers have been adjusted to frequency at the factory. After installation they may no longer be on frequency. Each channel may be adjusted to the correct frequency by its crystal trimmer capacitor (C-293 to C-298 and C-393 or C-394). Adjust the appropriate capacitor (see drawing RS-264) in small steps, measuring the crystal frequency after each adjustment until the correct frequency is reached. If the available frequency meter has insufficient range to measure the crystal frequency, the second or the twelfth harmonic may be measured. These harmonics are the outputs to the mixer tubes.

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c. Power Supply: Check terminal board TB-404 to see if the link is connected between the proper terminals (see drawing G-119). This terminal board is located near the right edge on the back of the power supply chassis. If the selective ringer is used the link should be connected between terminals 2 and 3. Between terminals 1 and 2, if the "B" loudspeaker is used. The terminals on this board are numbered from right to left.

d. Control Unit: If push-button rather than vodas operation is used, remove the jumper between terminals 26 and 27 on terminal board TB-602.

e. Motor Generator MG-1001: When the AC input motor generator is used, check that the connections on terminal board TB-1002 are correct for the available input line voltage. Drawing B-373 shows the correct connections for either 115 or 230 volts input. Also check that the connections to the rectifier terminal board TB-1003 agree with drawing B-373 for the input line voltage being used.

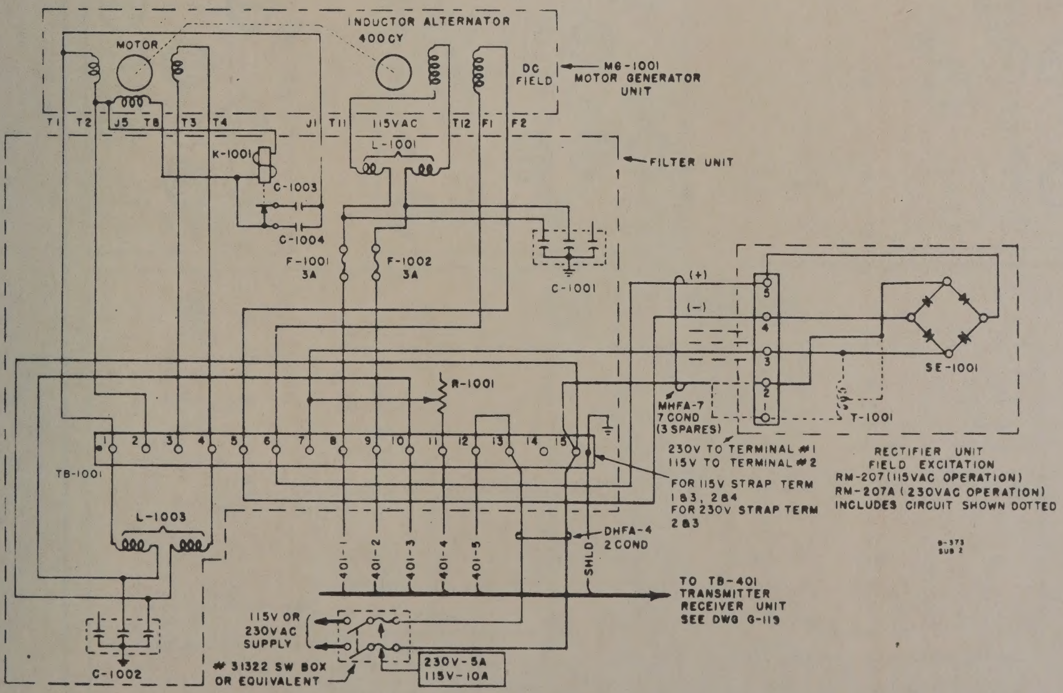
INDUCTOR ALTERNATOR
400 CY
MOTOR
DC FIELD
MG-1001 MOTOR GENERATOR UNIT
T1
T2
J5
T8
T3
T4
J1
T11
115VAC
T12
F1
F2
FILTER UNIT
K-1001
L-1001
C-1003
C-1004
F-1001 3A
F-1002 3A
C-1001
(+)
(-)
R-1001
SE-1001
T-1001
MHFA-7 7 COND (3 SPARES)
230V TO TERMINAL #1
115V TO TERMINAL #2
FOR 115V STRAP TERM 1 & 3, 2 & 4
FOR 230V STRAP TERM 2 & 3
RECTIFIER UNIT
FIELD EXCITATION
RM-207 (115VAC OPERATION)
RM-207A (230VAC OPERATION)
INCLUDES CIRCUIT SHOWN DOTTED
TB-1001
L-1003
DHFA-4 2 COND
401-1
401-2
401-3
401-4
401-5
SHLD
TO TB-401 TRANSMITTER RECEIVER UNIT SEE DWG G-119
B-373 SUB 2
115V OR 230VAC SUPPLY
# 31322 SW BOX OR EQUIVALENT
230V-5A
115V-10A
C-1002

Figure 12-Motor Generator 115/230VAC Input, Schematic

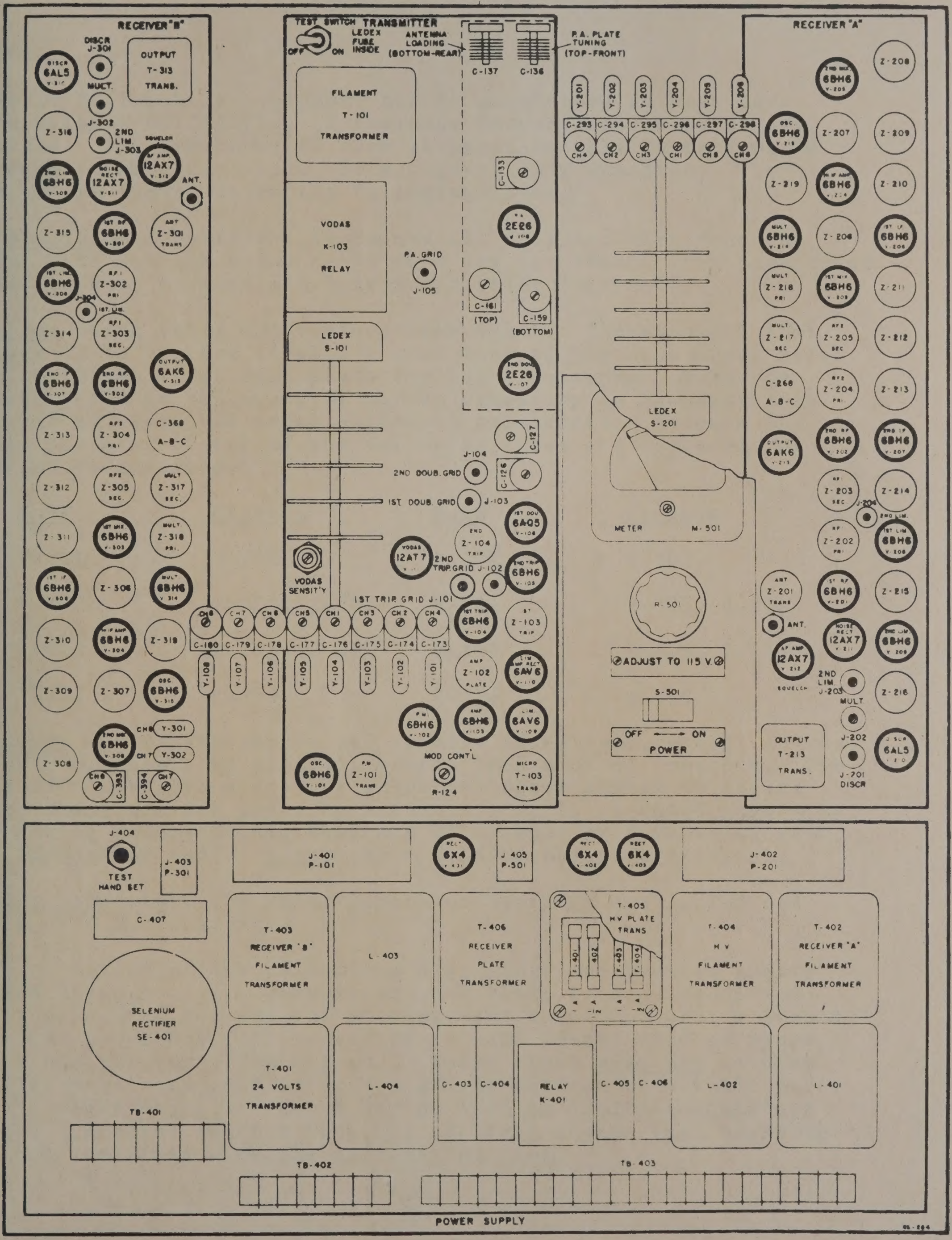
RECEIVER "B"
TEST SWITCH
OFF ON
TRANSMITTER
LEDEX FUSE INSIDE
ANTENNA LOADING (BOTTOM-REAR)
P.A. PLATE TUNING (TOP-FRONT)
C-137
C-136
RECEIVER "A"
DISCR J-301
6AL5 V-316
OUTPUT T-313 TRANS.
MULT.
J-302
2ND LIM. J-303
SQUELCH
AF AMP 12AX7 V-312
NOISE RECT 12AX7 V-311
2ND LIM 6BH6 V-309
ANT.
FILAMENT T-101 TRANSFORMER
Y-201 Y-202 Y-203 Y-204 Y-205 Y-206
C-293 C-294 C-295 C-296 C-297 C-298
CH4 CH2 CH3 CH1 CH8 CH6
Z-208
2ND MIX 6BH6 V-205
OSC. 6BH6 V-215
Z-207
Z-209
Z-219
2ND IF AMP 6BH6 V-204
Z-210
Z-316
Z-315
1ST RF 6BH6 V-301
ANT Z-301 TRANS
VODAS K-103 RELAY
C-133
P.A. 2E26 V-108
P.A. GRID J-105
MULT 6BH6 V-214
Z-206
1ST IF 6BH6 V-206
1ST LIM 6BH6 V-308
J-304
1ST LIM.
RF1 Z-302 PRI
RF1 Z-303 SEC.
C-161 (TOP)
C-159 (BOTTOM)
MULT Z-218 PRI
1ST MIX 6BH6 V-203
Z-211
Z-314
LEDEX S-101
2ND DOUB 2E26 V-107
MULT Z-217 SEC
RF2 Z-205 SEC
Z-212
2ND IF 6BH6 V-307
2ND RF 6BH6 V-302
OUTPUT 6AK6 V-313
C-268 A-B-C
RF2 Z-204 PRI
Z-213
Z-313
RF2 Z-304 PRI
C-368 A-B-C
LEDEX S-201
C-127
J-104
OUTPUT 6AK6 V-213
2ND RF 6BH6 V-202
2ND IF 6BH6 V-207
Z-312
RF2 Z-305 SEC.
MULT Z-317 SEC.
2ND DOUB. GRID
C-126
1ST DOUB. GRID
J-103
RF Z-203 SEC
Z-214
J-204
2ND LIM.
Z-311
1ST MIX 6BH6 V-303
MULT Z-318 PRI.
1ST DOUB 6AQ5 V-106
METER M-501
2ND Z-104 TRIP
VODAS 12AT7
2ND TRIP GRID J-102
2ND TRIP 6BH6 V-105
RF Z-202 PRI
1ST LIM 6BH6 V-208
1ST IF 6BH6 V-306
Z-306
MULT 6BH6 V-314
VODAS SENSIT'Y
1ST TRIP GRID J-101
R-501
ANT Z-201 TRANS
1ST RF 6BH6 V-201
Z-215
CH8 CH7 CH6 CH5 CH1 CH3 CH2 CH4
C-180 C-179 C-178 C-177 C-176 C-175 C-174 C-173
1ST TRIP 6BH6 V-104
1ST Z-103 TRIP
ANT.
NOISE RECT 12AX7 V-211
2ND IF AMP 6BH6 V-209
Z-310
2ND IF AMP 6BH6 V-304
Z-319
Y-108 Y-107 Y-106 Y-105 Y-104 Y-103 Y-102 Y-101
AMP Z-102 PLATE
LIM AMP RECT 6AV6 V-110
ADJUST TO 115 V.
AF AMP 12AX7 V-212
2ND LIM J-203
SQUELCH
Z-216
Z-309
Z-307
OSC. 6BH6 V-315
P.M. 6BH6 V-102
AMP 6BH6 V-103
LIM. 6AV6 V-109
S-501
MULT
2ND MIX 6BH6 V-305
CH8 Y-301
CH7 Y-302
Z-308
OFF ON POWER
OUTPUT T-213 TRANS.
J-202
DISCR 6AL5 V-210
J-201 DISCR
CH8 C-393
C-394 CH7
OSC. 6BH6 V-101
P.M. Z-101 TRANS
MOD CONT'L R-124
MICRO T-103 TRANS
J-404 TEST HAND SET
J-403 P-301
J-401 P-101
RECT 6X4 V-401
J 405 P-501
RECT 6X4 V-402
RECT 6X4 V-403
J-402 P-201
C-407
T-403 RECEIVER "B" FILAMENT TRANSFORMER
L-403
T-406 RECEIVER PLATE TRANSFORMER
T-405 H.V. PLATE TRANS
F-401 F-402 F-403 F-404
T-404 H.V. FILAMENT TRANSFORMER
T-402 RECEIVER "A" FILAMENT TRANSFORMER
SELENIUM RECTIFIER SE-401
T-401 24 VOLTS TRANSFORMER
L-404
C-403 C-404
RELAY K-401
C-405 C-406
L-402
L-401
TB-401
TB-402
TB-403
POWER SUPPLY
05-294

Figure 15 Tube Location Chart

SECTION 5
MAINTENANCE

1. GENERAL

The ET-8040 mobile equipment can be maintained at peak performance without difficulty, if adequate inspection schedules are established. The frequency of such inspections will be determined by the conditions under which the equipment must function. The routine checks should cover the following items.

a. Cleanliness: Periodically remove all dust and dirt from the equipment with a brush or by means of a dry air blast. Pay particular attention to dust on terminal boards and relay terminals.

b. Tubes: Check tubes and replace weak tubes. The simplest test for a tube is to replace it with a good tube of the same type. Refer to drawing RS-264 or on back plate for tube locations. When the P. A. tube V-108 is replaced, it may be necessary to re-neutralize the circuit as described under alignment procedures. Recheck the indicated circuits if any of the following tubes are replaced, or removed and re-inserted:

Tube	Circuit	Tube	Circuit
V-201	Z-202	V-301	Z-302
V-202	Z-203, Z-204	V-302	Z-303, Z-304
V-203	Z-205, Z-217	V-303	Z-305, Z-317
V-214	Z-218	V-314	Z-318

c. Relays: The relays should not require adjustment, except as the result of rough handling or the improper treatment of contacts. The contacts of all relays should be inspected occasionally to insure that they are clean and properly adjusted. If it is found that they are not making good contact, they may be cleaned by burnishing with a relay burnishing tool. Never use a file or abrasive material.

d. Motor Generator: The motor generator bearings are sealed and do not require lubrication.

The condition of the commutator slip rings and brushes should be checked periodically. Commutators and rings in good condition should be free from burning and pitting, and should present a smooth light brown appearance. If necessary to sand commutators or rings, use #00 sandpaper, or a finer grade. Emery cloth must not be used as metallic particles will introduce shorts between commutator bars. Normally a clean piece of canvas may be used to "buff" commutators and rings. Exercise caution to avoid electric shocks when dressing commutators and rings with the machine rotating.

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When inspecting brushes, take specific care to remove one brush at a time placing a check mark on the top surface of the brush so that, when it is replaced in the brush holder, it may be replaced on the commutator in the same position. If the brush is replaced inverted, it will not seat on the commutator in the same manner as originally "worn in". When brushes have worn to approximately one-half their original length, they should be replaced with new brushes. If a brush is to be replaced, first wrap a piece of #00 or finer sandpaper, grit side out, around the commutator (or slip rings). Insert the new brush and rotate the armature by hand until the ends of the brushes are "worn in" to the shape of the commutator. Remove the sandpaper and blow or dust out the loose sandpaper grit.

2. MAINTENANCE ADJUSTMENTS

a. Crystal Frequency: Crystal frequency should be checked and adjusted as described in Section 4, paragraph 3.

b. Modulation Limiter: The modulation limiter R-124 has been correctly adjusted at the factory and normally should not require readjustment. However, if a component of the modulation system is replaced, readjustment is necessary

The carrier frequency deviation can be limited by adjusting R-124 (located on the front of the transmitter chassis) to obtain a 15 kilocycle frequency deviation on either side of the carrier frequency when speaking closely into the microphone in a loud tone of voice. With this adjustment made, shout into the microphone. The frequency should not deviate more than the ±15 kc limit. Transmitter modulation (carrier deviation) should not exceed ±15 kilocycles.

3. TROUBLE SHOOTING

a. General: Sudden and complete failure of the equipment is usually due to a blown fuse. Replacement fuses should be of the proper rating. Should a fuse blow immediately upon installation, do not replace a second time until trouble has been located and cleared.

FUSE LOCATIONS

Symbol	Location	Protects	Amp	Volts	Type
F-101	Rear of transmitter chassis	Ledex solenoids	1.25	125	3-AG SLO-BLO
F-401	Top of transformer T-405	Relays, Ledex solenoids, lamps, microphone, push-buttons, selective ringer bell.	1.00	250	3-AG

FUSE LOCATIONS (Cont'd)

Symbol	Location	Protects	Amp	Volts	Type
F-402	Top of transformer T-405	All filaments except transmitter and V-401.	1.50	250	3-AG
F-403	Top of transformer T-405.	High voltage power supply.	1.00	250	3-AG
F-404	Top of transformer T-405.	Receiver power supply.	.50	250	3-AG
F-701) F-702)	Motor generator filter box.	Motor generator output.	3.00	250	3-AG
Line Fuses	Switch box	Motor generator input.			
		115 V DC	10.00	250	Renew. ferrule.
		32 V DC	30.00	250	Renew. ferrule.
		115 V AC	10.00	250	Renew. ferrule.
		230 V AC	5.00	250	Renew. ferrule.

When trouble persists after the more obvious causes, such as power failure and tubes, have been checked, it can usually be traced to the section of the equipment at fault by a system of elimination. Familiarity with the equipment and the switching circuits will simplify the process. The trouble chart gives a rapid rundown of trouble symptoms and probable causes.

After the section of equipment at fault has been located, a voltage check can be made by reference to the schematic diagrams, drawings G-110, G-114, G-115 and G-119. These drawings show voltages (±20%) at various points in the circuit. These voltages were measured to ground with an RCA Voltohmyst.

When serious trouble is indicated requiring circuit checking, it is good practice to have a spare chassis put into service while the faulty chassis is checked.

TROUBLE CHART

Trouble	Probable Defective Component or Circuit
Motor generator stopped.	Line fuses.
No 115 volts at meter panel.	Fuses F-701 and F-702.

TROUBLE CHART (Cont'd)

Trouble	Probable Defective Component or Circuit
No channel lamps.	Fuses F-401 and F-101, rectifier SE-401, and capacitors C-401 and C-402.
On standby, cannot switch "B" receiver between channel 7 and 8.	Switch S-609 or relay K-301.
No reception.	Fuses F-402, F-403 or F-404. Tubes V-401, V-402 or V-403.
No background noise.	Squelch R-613, R-901, V-212 or V-313.
Noisy or intermittent.	Squelch R-613, R-901, V-212 or V-313.
Weak or fades.	Tubes, power supplies.
Transmitter keys when handset is lifted.	Vodas relay K-103, tube V-111 or capacitor C-183.
Lifting handset does not switch reception to handset.	Switchhook S-610, resistor R-615 or R-616.
Cannot change channels.	Ledex switches S-101 or S-201. Push buttons.
Transmitter will not key.	Vodas relay K-103, tube V-111 or vodas sensitivity control R-133.
Low or no output.	Power amplifier V-108, relay K-101 or multipliers.
Poor modulation.	Tubes V-109, V-110, V-102 or microphone.

b. Tests and Corrective Measures:

(1) Transmitter Multipliers - To check operation of the multiplier stages, connect a high sensitivity voltmeter to jacks J-105, J-104, J-103, J-102 and J-101 in sequence. Check voltage obtained at each jack with values marked on schematic diagrams. This will indicate tube or circuit at fault.

NOTE: Grid drive at J-105 must be 34 volts or more.

(2) Power Amplifier, V-208 - Plug 0-100 milliammeter with leads fitted with phone plug into J-107. Normal plate load is 80 ma. Lower values may be caused by low plate voltage, a defective tube, antenna improperly loaded (refer to initial adjustments, Section 4), or insufficient grid drive (check as in paragraph (1) above).

(3) Microphone Circuit and Modulation Limiter.- To check the microphone circuit, impress an approximately 0.05 volt, 1000 cycle signal to the microphone input transformer T-103, set R-124 to its maximum clockwise position, and connect a modulation monitor to the transmitter. The modulation monitor should show approximately ±15 kilocycle deviation. To check the limiter, increase the input signal to the limiter threshold (approximately 0.3 volt), and adjust R-124 for 15 kilocycle deviation. Increase the audio input 20 db and note the corresponding increase in frequency deviation on the monitor. If the limiter is functioning properly, the increase in swing should not exceed 1.5 db.

NOTE: Do not disturb the setting of R-124 or attempt these tests unless the proper test equipment is available.

(4) Receiver Circuits - The receiver can be checked by the usual signal tracing methods to determine circuit at fault. A review of the alignment procedures will aid making these checks. When the defect is localized, a check of the components in the circuit involved should detect the fault.

SECTION 6
ALIGNMENT PROCEDURE

1. RECEIVER ALIGNMENT

NOTE

THE RECEIVER ALIGNMENT PROCEDURE IS REPEATED IN CONDENSED CHART FORM AT THE END OF THIS SECTION.

a. General: For complete alignment of the receiver section, the following equipment is necessary.

VoltOhmyst or equivalent or a 20,000 ohm/voltmeter.
Signal Generator 1.8 to 28 megacycles.
Signal Generator 150 to 175 megacycles.
Carbon Resistor 0.1 to 1.0 megohm (Isolation for circuit)
Carbon Resistor 10,000 ohms (Loading Resistor)

The receiver has been completely aligned at the factory prior to shipment. The "A" receiver R. F. and High I. F. sections have been aligned for 156.8 Mc, while the "B" receiver has been aligned for 162.0 Mc. Realignment of these circuits should not be necessary unless a frequency determining component is replaced, or it is desired to change the original receiver frequency. Low I. F. circuits should never require alignment unless replaced or damaged.

When it is necessary to realign more than one circuit, the following sequence should be observed:

1 - Low I. F.
2 - Discriminator
3 - Oscillator Doubler
4 - High I. F.
5 - Multipliers
6 - R. F.

Frequency Formulae:

1. Crystal Frequency (Mc) = $\frac{\text{Signal Frequency (Mc)} - 2\text{ Mc}}{14}$

2. High I. F. (Mc) = (2 X Crystal Frequency) +2 Mc

3. Low I. F. = 2 Mc

Before proceeding with alignment of the receiver section, place the transmitter-receiver unit in operating condition as explained in Section 2.

The following instructions will be for the "A" receiver. The "B" receiver instructions are the same except that the symbol numbers are changed from the 200 series to the 300 series. Place the transmitter test switch in the OFF position.

b. Low I. F. Alignment:

(1) Apply a 2 megacycle (±2 kilocycle) signal to pin 1 of V-208. Maintain the signal generator output so that a VoltOhmyst, at J-203, reads 7 volts (0.5 volts on a 20,000 ohms/voltmeter).*

(2) Connect a 10,000 ohm loading resistor between terminals 2 and 3 of the last I. F. transformer Z-215, align the bottom core of this transformer for peak meter reading, and then place the resistor across terminals 1 and 4 aligning the top core for peak meter reading. Keep the signal generator attenuator adjusted to maintain a meter reading as explained in step (1).

(3) Remove the loading resistor and then check for symmetry of adjustment. To do this, note the number of kilocycles above and below the alignment frequency to which a signal generator must be tuned to produce an output indication of 5 volts on the VoltOhmyst (0.35 volt on the 20,000-ohm-per-volt meter), Lack of symmetry (an unequal number of kilocycles above and below the alignment frequency) should be corrected by readjusting the top core of the transformer being aligned

NOTE: When the signal generator is tuned above and below resonance, make sure the generator output remains constant.

*Use a 470,000 ohm resistor in series with the meter lead when connection is made directly to the control grid pin of a tube.

(4) Use the same procedure to align Z-214 as for Z-215, but this time connect the signal generator to the control grid of V-207 and the meter to J-304.

(5) Connect the signal generator to the control grid of V-206 and the meter to the control grid of V-207.

(6) Align Z-213, Z-212 and Z-211 (in the order given) using the same procedure as described in steps (1) to (3), except that the meter reading should be kept at 2.5 volts instead of 7 volts (0.2 volt instead of 0.35 volt on a 20,000-ohms-per-volt meter), and the symmetry should not be checked until all three transformers have been aligned. Symmetry should be checked by tuning the signal generator off resonance until the meter reads 2.0 volts (0.18 volt on a 20,000-ohms-per-volt meter). It should only be necessary to readjust the top core of Z-213 to obtain symmetry.

(7) Connect the signal generator to the control grid of V-205 and the meter to the control grid of V-206.

(8) Align Z-210, Z-209 and Z-208 as described in step (6). If this group of transformers produce a curve which is not symmetrical, it should only be necessary to align the top of Z-210. This completes the alignment of the low I. F.

c. Discriminator Alignment:

(1) Connect a 2 megacycle (±2 kilocycle) signal to the control grid of the first limiter tube V-208 and adjust the generator attenuator for 1.0 volt output. An alternate method is to connect the signal generator to the control grid of the second I. F. amplifier V-207, and adjust the output of the generator to obtain maximum voltage at the second limiter jack J-203.

(2) Connect a VoltOhmyst (or a 20,000 ohm-per-volt meter) in series with a 0.1 to 1.0 megohm resistor to one of the diode plates of the discriminator tube V-210.

(3) Turn the bottom core of the discriminator transformer Z-216 all the way out, then adjust the top core for a peak meter reading.

(4) Connect the meter to the discriminator jack J-201, and adjust the bottom core of Z-216 for zero meter reading. The meter should swing rapidly through zero as the core is tuned slightly after the correct zero setting is reached.

(5) To check the discriminator symmetry, tune the signal generator 20 kilocycles higher in frequency, note the meter reading, then tune the signal generator 20 kilocycles lower in frequency and again note the meter reading. The two readings should be opposite in polarity and equal in value within 10 percent. If the readings vary more than 10 percent or if better balance is desired, retune the top core of Z-216 until the desired symmetry is obtained.

d. High I. F. Alignment:

(1) Plug in the correct crystal corresponding to the alignment frequency, see formula number 1. The alignment frequency will be the frequency nearest to the center of the range of the band of frequencies to be employed (normally this will be 156.8 Mc).

(2) **Connect** a VoltOhmyst or a voltmeter with an internal re**sistance** of 20,000 ohms-per-volt to J-202, then adjust the bottom core of Z-219 for a peak meter reading. This should be approximately -30 volts on the VoltOhmyst or -16 volts on the 20,000 ohm-per-volt meter.

NOTE: The resonant frequency of Z-206, Z-207 and Z-219 decreases when the cores are turned in (clockwise).

(3) Connect the voltmeter to J-204, then connect the output of the signal generator to the control grid of V-205, and tune the signal generator to the frequency that gives the highest meter reading. The high I. F. should be twice the crystal frequency plus 2 megacycles. Do not set the signal generator to the image frequency, which is four megacycles lower than the high I. F. or change the frequency setting until step (4) has been completed.

(4) Leave the voltmeter connected to J-204, connect the signal generator output to pin 1 of V-203, then adjust the top and bottom cores of Z-206 and Z-207, and the bottom core of Z-219 for peak meter deflection. As peak meter readings increase, reduce the signal generator output so that the voltage is held down to 5 volts on the vacuum tube voltmeter or 0.35 volt on the 20,000 ohms-per-volt meter.

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e. R. F. Alignment:

NOTE: If the receiver is to be tuned to a frequency between 152 and 162 megacycles, the jumpers between terminals 2 and 4 on Z-201, Z-203, Z-204, Z-205, Z-218 and between terminals 1 and 2 on Z-202 - as well as C-269 - must be in the circuits as shown on drawing G-110. For frequencies higher than 162 megacycles, the jumpers, if present, must be removed. The capacitor C-269 may also be omitted for the higher frequencies.

(1) Connect the voltmeter to J-203. Connect the high frequency signal generator to the antenna jack J-205, then tune the signal generator to the frequency that it is desired to receive (152 to 174 megacycles). Make a fine frequency adjustment by tuning for maximum deflection on the meter. Adjust the output of the signal generator so that the voltmeter indicates a voltage that is approximately midway between the noise level and the point at which the second limiter grid voltage (measured at J-203) reaches saturation. To find the noise and saturation levels, proceed as follows:

Reduce the signal generator output to zero. The voltmeter now indicates the receiver noise voltage at the grid of the second limiter. Gradually increase the output of the signal generator until the meter voltage begins to increase and then reaches a saturation point (stops increasing). This is the saturation level at J-203.

(2) With the meter and signal generator connected and adjusted as in the preceding step, adjust the top core of Z-219, Z-218, Z-217, Z-205, Z-204, Z-203, Z-202 and Z-201 for a peak meter indication. Reduce the signal input as necessary in order to maintain the meter reading approximately at the mid-point between the noise level and saturation.

NOTE 1: Transformer Z-201 and Z-202 will tune very broadly. When tuning any of the R. F. stages mentioned in the preceding paragraph, it is best to tune for maximum noise quieting as well as peak meter deflection.

NOTE 2: If noise saturation (as measured at J-203) occurs at any time during the R. F. alignment, connect the voltmeter to J-204 instead of J-203.

(3) Reduce the signal generator strength to one microvolt or less, then carefully retune all the circuits mentioned in step (2). Best results are always obtained by adjusting Z-201 and Z-202 for maximum noise quieting.

RECEIVER ALIGNMENT CHART

Step No.	Connect Sig. Gen. To	Sig. Gen. Frequency in MC	Connect Voltmeter To	*Meter Voltage in Volts		Miscellaneous Connections and Instructions	Adjust
				Volt-Ohmyst	20,000 Ohms/Volt		
				LOW I-F			
1	Pin 1, V208	2	Pin 1, V209	7	0.5	Adjust sig. gen. output to obtain specified voltage on meter.	
2	Pin 1, V208	2	Pin 1, V209	7	0.5	a. Connect 10,000 ohm resistor between terminals 2 and 3 of Z215 b. Connect resistor between terminals 1 and 4 c. Remove resistor.	a. Bottom core of Z215 for peak meter reading b. Top core for peak meter reading.
3	Pin 1, V208	2	Pin 1, V209	5	0.35	Tune sig. gen. to both sides of the center frequency until meter indicates specified voltage (check for symmetrical response)	If response is not symmetrical readjust top core of transformer, recheck and readjust until response is symmetrical.
4	Pin 1, V207	2	Pin 1, V208	7	0.5	Same as step 2, on Z214.	Z214 as in step 2, check for symmetry as in step 3.
5	Pin 1, V206	2	Pin 1, V207	2.5 (2 volts for symmetry check)	0.18	Same as step 2 on Z213, Z212, and Z211, in that order.	Z213, Z212 and Z211, check for overall symmetry after last adjustment. If unsymmetrical, adjust top of Z213 only.
6	Pin 1, V205	2	Pin 1, V206	2.5 (2 volts for symmetry check)	0.18	Same as step 2 on Z210, Z209, and Z208.	Z210, Z209 and Z208, check for overall symmetry. Adjust top of Z210 if unsymmetrical.
				DISCRIMINATOR			
7	Pin 1, V208	2	Pin 2 or 7, V210	Peak	Peak	Adjust sig. gen. output for 1.0 volt	Turn bottom core of Z216 all the way out, adjust top core for peak meter reading
8	Pin 1, V208	2	J201 (Discriminator)	0	0		Bottom core of Z216 for ZERO meter reading. Check for symmetry to + 20KC, -20KC. If not symmetrical, adjust top core of Z216 until symmetrical.
				HIGH I-F			
9	Not used		J202	Peak	Peak	Plug in proper crystal.	a. C283 to one half max. capacity b. Bottom core of Z219 for peak.
10	Pin1, V205	23.4 to 27.6	J204	Peak	Peak	a. High I-F freq. = 2 x crystal freq. + 2 mc b. Do not change sig.gen. setting during high I-F alignment. (Avoid image freq. 4 mc lower)	
11	Pin 1, V203		J204	5	0.35	Reduce sig. gen. output to obtain specified voltage on meter	Top and bottom cores of Z206 and Z207, and bottom core of Z219 for peak.
				R-F			
12	J106	Desired sig. freq. (152-174 mc)	J203	Peak	Peak	Tune sig. gen. for peak meter reading. Adjust output of sig. gen. so that receiver operates at the midpoint between the noise level and saturation. NOTE: If noise saturation occurs, connect voltmeter to J204 instead of J203.	a. Top core of Z218, Z217, Z205, Z204, Z203, Z202, and Z201 for peak meter deflection. b. Reduce sig. gen. output to one microvolt or less, then retune all circuits mentioned in a. Tune Z201 and Z202 for max. audio noise quieting.

* Use a 470,000 ohm resistor in series with the meter lead when connection is made directly to the control-grid pin of a tube.

2. TRANSMITTER ALIGNMENT

a. General: In order to completely align and adjust the transmitter, the following equipment is necessary.

VoltOhmyst or equivalent or a 20,000 ohm/volt meter.
Milliammeter, 0-100 milliamperes, with plug to fit J-107.
Field Intensity Indicator.
Wavemeter 12 megacycles to 180 megacycles.
Antenna or 50 Ohm Dummy Load (Non-inductive).
Insulated Aligning Tool.

The transmitter has been completely aligned at the factory to 156.8 Mc. If a frequency determining component is replaced, re-align only the circuit involved. When it is desired to change the original frequency, complete realignment is necessary.

b. Complete Transmitter Alignment:

(1) Place the transmitter-receiver in operating condition as explained in section 2, but do not load the antenna jack J-106 at this time. Remove the handset from its hanger and put the TRANSMITTER TEST switch in the ON position.

(2) Plug in the correct crystal corresponding to the alignment carrier frequency (crystal frequency equals carrier frequency divided by 36). The alignment frequency will be the frequency nearest to the center of the range of the band of frequencies to be employed (normally this will be 156.8 Mc).

(3) Set the corresponding crystal frequency adjusting capacitor to one half of its maximum value.

NOTE: The ceramic "button type" variable capacitors used in this equipment are at maximum capacity when the solder dots on top of the rotor and stator are adjacent to each other.

(4) Check the voltage to ground at pin 1 of V-101 and V-103. The voltages should be approximately -9 and -4 respectively on a vacuum tube voltmeter, or -4 and -2 on a 20,000-ohm-per-volt meter.

(5) Connect the voltmeter to J-101 and adjust the top core of Z-102 for peak deflection on the meter.

(6) Connect the voltmeter to J-102. Adjust the bottom core and then the top core of Z-103 for peak deflection. Check the frequency by loosely coupling the wavemeter to Z-103. The frequency at this point should be three times that of the crystal.

CAUTION

WHEN USING THE WAVEMETER,
OBSERVE ALL SAFETY RULES.

(7) Connect the voltmeter to J-103. Adjust the bottom core, then the top core of Z-104 for peak deflection. Check the frequency. Z-104 should be tuned to nine times crystal frequency.

(8) Connect the voltmeter to J-104. Adjust C-126 and C-127 for peak deflection.

(9) Connect the voltmeter to J-105. Set C-159 at minimum capacity, then increase it by small amounts rotating C-161 through its full range at each setting of C-159. Resonance will be indicated by a sudden increase in meter deflection. When this occurs, carefully tune both capacitors for peak deflection. This peak value should be approximately -35 volts. If the voltage is considerably less than this value, check the neutralization as explained at the end of this procedure.

(10) Connect the antenna or dummy load to the antenna jack J-106, then connect the 0 to 100 milliammeter to the power-amplifier-plate-current jack J-107.

(11) Set C-137 at maximum capacity, then adjust the P. A. TUNE capacitor C-136 for a dip on the milliammeter.

(12) Decrease the capacity of C-137 until an 80 milliampere reading is obtained on the meter.

(13) Using a field intensity indicator, adjust C-136 and C-137 for maximum deflection at 80 milliampere loading.

c. Neutralization: To neutralize the power amplifier circuits, place the transmitter-receiver in operating condition and proceed as follows:

(1) Connect the antenna or dummy load to the antenna jack J-106, turn the ANT LOAD capacitor C-137 to maximum capacity, extreme counter-clockwise.

(2) Set C-133 to approximately half capacity. Ceramic capacitor C-133 is at maximum capacity when the solder points on top are adjacent to each other.

(3) Plug the milliammeter into the P. A. PLATE MA jack J-107. Keep clear of energized parts and meter terminals when power is ON.

(4) Move the transmitter test switch S-101 to the ON position. This should give a meter indication.

(5) With an insulated screwdriver, rotate P. A. TUNE capacitor C-136 until a sharp dip in plate current is noted.

(6) Remove the crystal, then rotate C-136 plus or minus approximately 15 degrees from the resonant position. If no change in plate current occurs, the power amplifier is neutralized.

(7) Should a change in plate current be noticed, decrease the capacity of C-133 slightly until no change is observed when C-136 is rotated.

(8) Replace the crystal, then repeak the power amplifier grid tuning capacitor C-159 for maximum grid drive.

(9) Repeat the procedure of resonating the power amplifier plate circuit by setting C-136 for a plate current dip, removing the crystal, and checking for a change in the power amplifier plate current when C-136 is rotated ±15 degrees from the resonance point. Do not reduce the capacity of C-133 any more than it is necessary to obtain this condition, otherwise a reduction in grid drive and power output may result.

3. CRYSTAL FREQUENCIES

Listed below are the frequencies presently assigned by the Federal Communications Commission for use in the VHF Maritime Mobile Service. When ordering crystals, specify Radiomarine type R-10A for the transmitter and Radiomarine type R-9A for the receiver.

TRANS. FREQ. MC	TRANSMITTER CRYSTAL FREQUENCY KC	RECEIVER FREQ. MC	RECEIVER CRYSTAL FREQUENCY MC
156.8	4355.556	156.8	11.05715
156.3	4341.667	156.3	11.02143
157.2	4366.667	157.2	11.08572
156.6	4350.000	156.6	11.04286
157.0	4361.112	157.0	11.07143
156.7	4352.778	156.7	11.05000
156.9	4358.333	156.9	11.06428
156.5	4347.222	156.5	11.03571
156.4	4344.444	156.4	11.02857
157.3	4369.445	162.0	11.42858
157.4	4372.223	161.9	11.42143

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

TRANSMITTER
Reference Dwg. G-114

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS		
C-101	Osc. Crystal Coupling	Ceramic, 1500 mmf	073-640
C-102	NOT USED		
C-103	Osc. Screen Bypass	Ceramic, 33 mmf, 500 V	073-352
C-104	Osc. Decoupling	SAME AS C-101	
C-105	P.M. Grid Coupling	Ceramic, 15 mmf, 500 V	073-248
C-106A	P.M. Cathode	Electrolytic 2 X 25 mfd, 25 V	077-637
C-106B	Mike Supply Filter	One section of C-106A	
C-107	Part of Z-101		
C-108	P.M. Cathode	SAME AS C-101	
C-109	Amplifier Grid Coupling	Ceramic, 150 mmf, 350 V	073-183
C-110	Amplifier Screen Bypass	SAME AS C-101	
C-111	Amplifier Plate Bypass	SAME AS C-101	
C-112	Part of Z-102		
C-113	1st Tripler Grid	SAME AS C-109	
C-114	1st Tripler Screen Bypass	SAME AS C-101	
C-115	1st Tripler Plate Bypass	SAME AS C-101	
C-116	Part of Z-103		
C-117	Part of Z-103		
C-118	2nd Tripler Grid Bypass	SAME AS C-101	
C-119	2nd Tripler Screen Bypass	SAME AS C-101	
C-120	2nd Tripler Plate Bypass	SAME AS C-101	
C-121	One section of Z-104		
C-122	One section of Z-104		
C-123	1st Doubler Grid Bypass	SAME AS C-101	
C-124	1st Doubler Screen Bypass	Ceramic, 1500 mmf, 500 V	073-538
C-125	1st Doubler Plate Bypass	SAME AS C-124	
C-126	1st Doubler Plate Tuning	Ceramic trimmer, 3-13 mmf	078-019
C-127	2nd Doubler Grid Tuning	SAME AS C-126	
C-128	2nd Doubler Grid Bypass	SAME AS C-124	

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SECTION 7

ET-8040 ELECTRICAL PARTS LIST

TRANSMITTER

CAPACITORS (Cont'd)

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
C-129	2nd Doubler Screen Bypass	Mica unmolded, 250 mmf	073-514
C-130	2nd Doubler Plate Bypass	SAME AS C-129	
C-131	NOT USED		
C-132	P.A. Grid Bypass	SAME AS C-124	
C-133	P.A. Screen Neutralizing	Ceramic trimmer, 4-30 mmf	078-016
C-134	P.A. Plate Coupling	SAME AS C-129	
C-135	P.A. Plate Bypass	SAME AS C-129	
C-136	P.A. Tuning	Variable, trimmer, 7 rotor, 7 stator plates, 4-50 mmf	078-565
C-137	Antenna Loading	SAME AS C-136	
C-138	Limiter Input Coupling	Ceramic, 51 mmf, 500 V	073-428
C-139	Limiter Output Coupling	Paper, tubular, 0.01 mf, 400 V	074-045
C-140	Limiter Output Filtering	Paper, tubular molded 0.022 mf, 400 V	074-190
C-141	NOT USED		
C-142	NOT USED		
C-143	P.A. Screen Decoupling	SAME AS C-124	
C-144	NOT USED		
C-145	NOT USED		
C-146	NOT USED		
C-147	NOT USED		
C-148	B+ Filter	Mica, unmolded, 0.22 mf	074-831
C-149	NOT USED		
C-150	NOT USED		
C-151	NOT USED		
C-152	NOT USED		
C-153	NOT USED		
C-154	NOT USED		
C-155	NOT USED		
C-156	2nd Doubler Fil. Bypass	SAME AS C-129	
C-157	P.A. Filter Bypass	SAME AS C-124	
C-158	1st Doubler Fil. Bypass	SAME AS C-124	
C-159	P.A. Grid Tuning	Ceramic, trimmer 7-45 mmf	078-160
C-160	B+ filter	5 mfd, TC-70	075-470
C-161	2nd Doubler Plate	5-20 mfd, N-300	078-017
C-162	Vodas Cathode Bypass	10 mfd, 50 V	075-598
C-163	A, B-, B+ filters C- Vodas Plate Bypass	3X10 mfd	077-845

SECTION 7
ET-8040 ELECTRICAL PARTS LIST

TRANSMITTER

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
		CAPACITORS (Cont'd)	
C-164	Vodas Hangover	.01 mfd	074-039
C-165	Vodas Hangover	SAME AS C-164	
C-166	Vodas Hangover	SAME AS C-164	
C-167	Vodas Hangover	SAME AS C-164	
C-168	Vodas Hangover	SAME AS C-164	
C-169	Vodas Hangover	SAME AS C-164	
C-170	Vodas Relay Bypass	0.22 mfd	074-831
C-171	Ledex Spark Suppressors	SAME AS C-170	
C-172	Ledex Spark Suppressors	SAME AS C-170	
C-173	Crystal Trimmer	4-30 mmfd, N-500	078-016
C-174	Crystal Trimmer	SAME AS C-173	
C-175	Crystal Trimmer	SAME AS C-173	
C-176	Crystal Trimmer	SAME AS C-173	
C-177	Crystal Trimmer	SAME AS C-173	
C-178	Crystal Trimmer	SAME AS C-173	
C-179	Crystal Trimmer	SAME AS C-173	
C-180	Crystal Trimmer	SAME AS C-173	
C-181	Vodas Grid Coupling	1000 uuf, CM35B102K	067-075
C-182	Microphone Filter	50 mfd, 25 V.	075-768
C-183	K-103 Spark Suppressor	25 mfd, 50 V.	075-706
		FUSE	
F-101	Ledex Solenoid	Glass 3AG, 1-1/4 A., 125 V. Slo Blo	146-142
		JACKS	
J-101	1st Tripler Test	Tip, round insulated head, black	259-819
J-102	2nd Tripler Test	SAME AS J-101	
J-103	1st Doubler Test	SAME AS J-101	
J-104	2nd Doubler Test	SAME AS J-101	
J-105	P.A. Test	SAME AS J-101	
J-106	Antenna	Connector, female, coaxial, chassis mounting type	258-129
J-107	P.A. Plate	Phone, normally closed, single circuit	259-295

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

TRANSMITTER

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
		RELAY	
K-101	Antenna Change-Over	DPDT, 24 V DC Coil	265-736
K-102	NOT USED		
K-103	Vodas	SPDT, 2200 ohm resistance	265-334
		INDUCTORS	
L-101	Part of Z-101		
L-102	Part of Z-101		
L-103	Part of Z-102		
L-104	1st Doubler Plate Tank Circuit	Coil, 4 turns #14 B.T. copper wire, 8-3/8" lg.	349-943
L-105	2nd Doubler Grid Tank Circuit	Coil, 4-1/2 turns, #14 B. T. copper wire, 6-7/8" lg.	349-945
L-106	2nd Doubler Plate Tank Circuit	Coil, single loop #12 tinned copper wire, 3-3/8" lg.	349-949
L-107	P.A. Grid Tank Circuit	Coil, single loop, #8 bare copper wire, silver plated 3-3/4" lg	349-951
L-108	P.A. Screen Choke	R.F. axial leads, green 1.8 uh, 100 ma	348-209
L-109	P.A. Plate Choke	SAME AS L-108	
L-110	P.A. Trap	6 turns, #8 bare copper wire, 9-3/4" lg, silver plated	349-932
L-111	P.A. Output	4 turns, #8 bare copper wire, 8-3/4" lg, silver plated	349-935
L-112	P.A. Output	2-1/2 turns, #8 bare copper wire, 8-3/4"lg. silver plated	349-937
L-113	Vodas Plate Load	17.5 H, Coil from Clare Relay D.C. Resistance 5000 ohms, 37,000 turns	350-226
L-114	NOT USED		
L-115	NOT USED		
L-116	NOT USED		
L-117	NOT USED		
L-118	P.A. Grid Choke	SAME AS L-108	

SECTION 7

ET*8040 ELECTRICAL PARTS LIST

TRANSMITTER

PLUGS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
P-101	Transmitter	33 contact	260-334
P-102	Receiver "A" Ant.	Male, co-axial	260-094
P-103	Receiver "B" Ant.	SAME AS P-102	

RESISTORS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
R-101	Oscillator Grid	Comp., 100,000 ohms, 1/2 W.	270-104
R-102	Osc. Screen Dropping	Comp., 82,000 ohms, 1/2 W.	270-823
R-103	Osc. Plate Dropping	Comp., 1000 ohms, 1/2 W.	270-102
R-104	P.M Grid	Comp., 470,000 ohms, 1/2 W.	270-474
R-105	P.M. Cathode	Comp., 1200 ohms, 1/2 W.	270-122
R-106	Amplifier Grid	SAME AS R-104	
R-107	Amplifier Screen Dropping	Comp., 39,000 ohms, 1/2 W.	270-393
R-108	Amplifier Plate Dropping	SAME AS R-103	
R-109	1st Tripler Grid	Comp., 18,000 ohms, 1/2 W.	270-183
R-110	1st Tripler Grid	SAME AS R-109	
R-111	1st Tripler Screen Dropping	SAME AS R-107	
R-112	1st Tripler Plate Dropping	SAME AS R-103	
R-113	2nd Tripler Grid	SAME AS R-107	
R-114	2nd Tripler Screen Dropping	SAME AS R-107	
R-115	2nd Tripler Plate Dropping	SAME AS R-103	
R-116	1st Doubler Grid	SAME AS R-101	
R-117	1st Doubler Screen Dropping	Comp., 33,000 ohms, RC20BF333K, 1/2 W.	270-333
R-118	1st Doubler Plate Dropping	Comp., 2200 ohms, RC42BF222K, 2 W.	276-222
R-119	2nd Doubler Grid	SAME AS R-117	
R-120	2nd Doubler Screen Dropping	SAME AS R-109	
R-121	2nd Doubler De-coupling	Comp., 180 ohms, 1 W. RC30BF181K	273-181
R-122	NOT USED		
R-123	NOT USED		

SECTION 7
ET-8040 ELECTRICAL PARTS LIST

TRANSMITTER
Reference Drawing G-114

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
		RESISTORS (Cont'd)	
R-124	Mod. Control	Comp., potentiometer, 100,000 ohms	244-345
R-125	Microphone Volt. Div.	Comp., 1200 Ohms, 1 W, RC30BF122K	273-122
R-126	Microphone Volt. Div.	Comp., 3300 ohms, 1/2 W, RC20BF332K	270-332
R-127	Limiter Grid	Comp., 560,000 ohms, 1/2 W, RC20BF564K	270-564
R-128	Limiter Cathode	Comp., 2200 ohms, 1/2 W, RC20BF222K	270-222
R-129	Plate Load	Comp, 56,000 ohms, 1/2 W, RC20BF563K	270-563
R-130	NOT USED		
R-131	NOT USED		
R-132	NOT USED		
R-133	Vodas Adjustment	Comp, potentiometer, 1 megohm, 1/4" bushing, 1/8" shaft	244-728
R-134	Vodas Cathode	Comp, 1500 ohms, 1/2 W RC20BF152K	270-152
R-135	Vodas Grid Leak	Comp, 4.7 megohms, 1/2 W, RC20BF475K	270-475
R-136	Vodas Plate Load	SAME AS R-117	
R-137	NOT USED		
R-138	P.A.Screen Decoupling	Comp, 56 ohms, 1/2 W, RC20BF560K	270-560
R-139	P.A.Screen Dropping	Comp, 3300 ohms, 2 W, RC42BF332K	276-332
R-140	P. A. Grid	Comp, 10,000 ohms, 1/2 W, RC20BF103K	270-103
R-141	Vodas Input Divider	SAME AS R-104	270-474
R-142	Vodas Input Divider	Comp, 1 megohm, 1/2 W RC20BF105K	270-105
R-143	NOT USED		
R-144	NOT USED		
R-145	Lamp Dropping, Chan. 7	Comp, 56 ohms, 2 W, RC42BF560K	276-560
R-146	Lamp Dropping, Chan. 8	SAME AS R-145	
R-147	NOT USED		
R-148	Vodas Plate Dropping	Comp, 33,000 ohms, 2 W, RC42BF333K	276-333
R-149	K-103 Spark Suppressor	Comp, 150 ohms, 2 W, RC42BF151K	276-151

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SECTION 7

ET-8040 ELECTRICAL PARTS LIST

TRANSMITTER
Reference Drawing G-114

SWITCHES

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
S-101	Channel Selector	8 section, 12 position, Ledex unit.	328-276
S-102	Transmitter Test	Toggle, SPST, 3 A, 250 V	328-637

TRANSFORMERS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
T-101	Filament	Pri. 105/110/115/120 V, 40 cycles. Sec. 6.3 V at 3/1 amps, No. 1 A "T" line case.	349-450
T-102	NOT USED		
T-103	Micro. Input	Iron core, source imped: resistance 120 ohms; sec.loading: 100,000 ohms in parallel with 30 mmfd.	350-011

VACUUM TUBES

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
V-101	Oscillator	Pentode, 6BH6	352-257
V-102	Phase Modulator	SAME AS V-101	
V-103	Amplifier	SAME AS V-101	
V-104	1st Tripler	SAME AS V-101	
V-105	2nd Tripler	SAME AS V-101	
V-106	1st Doubler	Pentode, 6AQ5	352-223
V-107	2nd Doubler	2E26	352-095
V-108	Power Amplifier	SAME AS V-107	
V-109	Limiter	Twin diode, triode, 6AV6	352-240
V-110	Limiter	SAME AS V-109	
V-111	Bias Amplifier	Twin triode, 12AT7	352-489

SOCKETS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
XF-101	Holder for Fuse F-101	Littelfuse #357001	
XV-101	V-101 Tube	7 pin, miniature, natural phenolic with metal mtg. plate, shielded.	261-540
XV-102	V-102 Tube	SAME AS XV-101	
XV-103	V-103 Tube	7 pin, miniature, mica filled rubber	261-650
XV-104	V-104 Tube	SAME AS XV-103	
XV-105	V-105 Tube	SAME AS XV-103	
XV-106	V-106 Tube	SAME AS XV-101	
XV-107	V-107 Tube	Octal, mica filled bakelite with locking ring mtg.	261-542
XV-108	V-108 Tube	SAME AS XV-107	
XV-109	V-109 Tube	SAME AS XV-101	
XV-110	V-110 Tube	SAME AS XV-101	

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SECTION 7

ET-8040 ELECTRICAL PARTS LIST

TRANSMITTER
Reference Drawing G-114

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
		SOCKETS (Cont'd)	
XV-111	V-111 Tube	9 pin, miniature, molded black phenolic with metal mounting plate.	261-559
XY-101	Channel 4 Crystal	2 contact, steatite with beryllium copper contacts.	265-597
XY-102	Channel 2 Crystal	SAME AS XY-101	
XY-103	Channel 3 Crystal	SAME AS XY-101	
XY-104	Channel 1 Crystal	SAME AS XY-101	
XY-105	Channel 5 Crystal	SAME AS XY-101	
XY-106	Channel 6 Crystal	SAME AS XY-101	
XY-107	Channel 7 Crystal	SAME AS XY-101	
XY-108	Channel 8 Crystal	SAME AS XY-101	
	NETWORKS		
Z-101	Modulator	Assembly consists of L-101, L-102 and C-107	010-572
Z-102	Amplifier Plate	Assembly consists of L-103 and C-112	010-374
Z-103	1st Tripler Plate	Assembly consists of T-101, C-116 and C-117	010-373
Z-104	2nd Tripler Plate	Assembly consists of T-102, C-121 and C-122	010-376

SECTION 7
ET-8040 ELECTRICAL PARTS LIST

RECEIVER "A"
Reference Drawing G-110

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS		
C-201	1st RF Amp. Grid Bypass	250 mmfd	073-514
C-202	NOT USED		
C-203	---------- PART OF Z-201 ----------		
C-204	---------- PART OF Z-202 ----------		
C-205	1st RF Fil. Bypass	SAME AS C-201	
C-206	---------- PART OF Z-203 ----------		
C-207	Coupling from Z-202 to Z-203.	6 mmfd	073-150
C-208	1st RF Amp. Plate Bypass	SAME AS C-201	
C-209	2nd RF Amp. Cath. Bypass	SAME AS C-201	
C-210	2nd RF Amp. Coupling	33 mmfd	073-356
C-211	---------- PART OF Z-204 ----------		
C-212	---------- PART OF Z-205 ----------		
C-213	1st Mixer Coupling	SAME AS C-210	
C-214	2nd RF Amp. Plate Bypass	SAME AS C-201	
C-215	AF Grid Coupling	Fixed, ceramic, insulated, 680 mmfd, 350 V	073-508
C-216	1st Mixer Cathode Bypass	SAME AS C-201	
C-217)	---------- PART OF Z-206 ----------		
C-218)			
C-219	High IF Amp. Coupling	Fixed, ceramic, insulated, 100 mmfd, 500 V	073-134
C-220	1st Mixer Screen Bypass	1500 mmfd	073-640
C-221	Ledex Spark Suppressor	Fixed, molded paper, .22 mfd, 400 V,	074-831
C-222	Ledex Spark Suppressor	SAME AS C-221	
C-223	High IF Amp. Scr. Bypass	SAME AS C-220	
C-224)	---------- PART OF Z-207 ----------		
C-225)			
C-226	2nd Mixer Coupling	SAME AS C-210	
C-227	2nd Mixer Cathode Bypass	SAME AS C-220	
C-228	2nd Mixer Screen Bypass	Fixed, ceramic, flat flat disc, high "K" type, .01 mfd, 450 V	074-150
C-229)	---------- PART OF Z-208 ----------		
C-230)			
C-231	NOT USED		
C-232)	---------- PART OF Z-209 ----------		
C-233)			
C-234	NOT USED		
C-235)	---------- PART OF Z-210 ----------		
C-236)			
C-237	1st IF Amp. Coupling	SAME AS C-219	
C-238)	---------- PART OF Z-211 ----------		
C-239)			
C-240	2nd IF Amp. Plate Bypass	Fixed, paper tubular, .033 mfd, 400 V	074-179

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

RECEIVER "A"

Reference Drawing G-110

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS (Cont'd)		
C-241)	----------		
C-242)	---------- PART OF Z-212 ----------		
C-243	2nd Lim. Jack Filter	SAME AS C-228	
C-244)			
C-245)	---------- PART OF Z-213 ----------		
C-246	1st IF Amp Scr. Bypass	SAME AS C-228	
C-247	AVC Filter	SAME AS C-219	
C-248	AVC Filter	SAME AS C-228	
C-249	1st Lim. Jack Filter	SAME AS C-228	
C-250	2nd IF Amp Scr. Bypass	SAME AS C-228	
C-251)			
C-252)	---------- PART OF Z-214 ----------		
C-253	1st Lim. Grid Bypass	51 mmfd	073-428
C-254	1st Lim. Plate and Screen Bypass	SAME AS C-228	
C-255)			
C-256)	---------- PART OF Z-215 ----------		
C-257	2nd Lim. Grid Bypass	SAME AS C-210	
C-258	2nd Lim. Plate and Screen Bypass	SAME AS C-228	
C-259	Noise Rect. Coupling	SAME AS C-219	073-134
C-260	---------- PART OF Z-216 ----------		
C-261	T-211 Tuning	82 mmfd.	073-490
C-262	T-211 Tuning	SAME AS C-261	
C-263	Discr. Cathode	Fixed, mica, molded, 220 mmfd, 500 V	073-330
C-264	Noise Rect. Filter	SAME AS C-228	
C-265	Noise Rect. Filter	Fixed, paper, tubular, .047 mfd, 200 V	074-344
C-266	Discr. Output Coupling	Fixed, ceramic, flat disc high "K" type, .005 mfd, 500 V.	073-283
C-267	Squelch Cont. Pl. Bypass	SAME AS C-228	
C-268)		20 mfd X 3, 400/400/25 V	077-288
C-268A)	AF Amp Cath. Bypass	One Section of C-268	
C-268B)	AF Amp B+ Decoupling	One Section of C-268	
C-268C)	Power Output Cath. Bypass	One Section of C-268	
C-269	Osc. Doubler Bypass	Fixed, ceramic, non-insulated, 8 mmfd, 500 V	073-174
C-270	AF Amp. Coupling	1500 mmfd	073-640
C-271	Osc. Doubler Scr. Bypass	SAME AS C-215	
C-272)			
C-273)	---------- One Section of Z-219 ----------		
C-274	Osc. Doubler Pl. Decoupl.	SAME AS C-220	
C-275	2nd Mixer Osc. Coupling	.68mmfd.	073-018

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ET-8040 ELECTRICAL PARTS LIST

RECEIVER "A"

Reference Drawing G-110

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS (Cont'd)		
C-276	1st Mixer, Mult. Coupl.	1.5 mmfd.	073-036
C-277	---------- PART OF Z-217 ----------		
C-278	---------- PART OF Z-218 ----------		
C-279	Multiplier Scr. Bypass	SAME AS C-220	073-640
C-280	Osc. Doubler Coupling	SAME AS C-210	
C-281	Crystal Coupling	SAME AS C-220	
C-282	Crystal Bypass	Fixed, ceramic, non-insulated, 91 mmfd, 500 V	073-333
C-283	NOT USED		
C-284	J-202 Filter	SAME AS C-220	
C-285	Coupling from Z-204 to Z-205	SAME AS C-207	
C-286	J-201 Filter	SAME AS C-228	
C-287	Coupling from Z-217 to Z-218	SAME AS C-207	
C-288	1st IF Amp Cath. Bypass	SAME AS C-228	
C-289	Power Output Coupling	SAME AS C-266	
C-290	Power Output Grid Bypass	470 mmfd.	073-331
C-291	Noise Rect. Pl. Coupling	SAME AS C-210	073-356
C-292	AVC Filter	SAME AS C-228	
C-293	Crystal Trimmer	4-30 mmfd, N-500	078-016
C-294	Crystal Trimmer	SAME AS C-293	
C-295	Crystal Trimmer	SAME AS C-293	
C-296	Crystal Trimmer	SAME AS C-293	
C-297	Crystal Trimmer	SAME AS C-293	
C-298	Crystal Trimmer	SAME AS C-293	
	JACKS		
J-201	Discriminator	Tip, black, round, insulated head.	259-819
J-202	Multiplier	SAME AS J-201	
J-203	2nd Limiter	SAME AS J-201	
J-204	1st Limiter	SAME AS J-201	
J-205	Antenna	Connector, female, coaxial	258-282
	INDUCTORS		
L-201	---------- PART OF Z-201 ----------		
L-202	1st RF Amp Fil. Choke	Reactor, filter choke, axial leads, 1.8 uh, 1000 ma.	348-209
L-203	---------- PART OF Z-202 ----------		
L-204	---------- PART OF Z-203 ----------		
L-205	---------- PART OF Z-204 ----------		

SECTION 7
ET-8040 ELECTRICAL PARTS LIST

RECEIVER "A"
Reference Drawing G-110

INDUCTORS (Cont'd)

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
L-206	---------- PART OF Z-205 ----------		
L-207	---------- PART OF Z-217 ----------		
L-208	---------- PART OF Z-218 ----------		

PLUG

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
P-201	Receiver "A"	Connector, male, 30 contacts, knife switch type.	260-298

RESISTORS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
R-201	1st RF Amp Grid	Comp, 560,000 ohms, 1/2 W, RC20BF564K	270-564
R-202	1st RF Amp Plate	Comp, 22,000 ohms, 1 W, RC30BF223M	274-223
R-203	NOT USED		
R-204	2nd RF Amp Cathode	Comp, 1500 ohms, 1/2 W, RC20BF152M	271-152
R-205	2nd RF Amp Screen	Comp, 47,000 ohms, 1/2 W, RC20BF473M	271-473
R-206	2nd RF Amp Grid	SAME AS R-201	
R-207	1st Mixer Grid	SAME AS R-205	
R-208	1st Mixer Cathode	Comp, 1000 ohms, 1/2 W, RC20BF102M	271-102
R-209	1st Mixer Screen	Comp, 100,000 ohms, 1/2 W, RC20BF104M	271-104
R-210	Noise Rect. Grid	SAME AS R-209	
R-211	High IF Amp Grid	SAME AS R-209	
R-212	Noise Rect. Grid	SAME AS R-201	
R-213	High IF Amp Plate	Comp, 47,000 ohms, 1 W, RC30BF473M	274-473
R-214	2nd Mixer Grid	SAME AS R-209	
R-215	2nd Mixer Cathode	SAME AS R-204	
R-216	2nd Mixer Screen	SAME AS R-213	
R-217	1st IF Amp Grid	Comp, 220,000 ohms, 1/2 W, RC20BF224M	271-224
R-218	1st IF Amp Screen	SAME AS R-202	
R-219	2nd IF Grid	SAME AS R-217	
R-220	Power Output Grid	SAME AS R-201	
R-221	AVC Filter	Comp, 1 Megohm, 1/2 W, RC20BF105M	271-105
R-222	2nd IF Amp Plate and Screen	SAME AS R-213	
R-223	1st Limiter Grid	SAME AS R-209	
R-224	1st Limiter Plate & Scr.	SAME AS R-213	
R-225	2nd Limiter Grid	SAME AS R-209	
R-226	2nd Lim. Plate & Screen	SAME AS R-213	

SECTION 7
ET-8040 ELECTRICAL PARTS LIST

RECEIVER "A"
Reference Drawing G-110

RESISTORS (Cont'd)

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
R-227	Discr. Plate	SAME AS R-209	
R-228	Discr. Plate	SAME AS R-209	
R-229	AF Amp Grid	SAME AS R-221	
R-230	Squelch Control Grid	SAME AS R-221	
R-231	AF AMP Cathode Voltage Divider	Comp, 270,000 ohms, 1/2 W, RC20BF274K	270-274
R-232	AF Amp Cathode Voltage Divider	Comp, 47,000 ohms, 1 W, RC30BF473K	273-473
R-233	Squelch Control Plate	SAME AS R-231	
R-234	Multiplier Grid	Comp, 56 Ohms, 1/2 W	270-560
R-235	AF Amp Cathode	Comp, 22,000 ohms, 1/2 W, RC20BF223K	270-223
R-236	Squelch Control AF Amp Cathode	Comp, 8200 ohms, 1/2 W, RC20BF822K	270-822
R-237	AF Amp Plate	Comp, 10,000 ohms, 1/2 W, RC20BF103M	271-103
R-238	AF Amp Plate	Comp, 270,000 ohms, 1/2 W, RC20BF274K	270-274
R-239	Power Output Cathode	Comp, 560 ohms, 1/2 W, RC20BF561K	270-561
R-240	1st Limiter Grid	SAME AS R-201	270-564
R-241	Multiplier Screen	Comp, 22,000 ohms, 1/2 W, RC20BF223M	271-223
R-242	Multiplier Grid	SAME AS R-201	
R-243	Osc. Doubler Plate	SAME AS R-213	
R-244	Osc. Doubler Screen	SAME AS R-205	
R-245	Osc. Doubler Grid	SAME AS R-217	
R-246	Noise Rect. Cathode	SAME AS R-221	
R-247	J-202 Dropping	SAME AS R-201	
R-248	1st IF Amp Cathode	Comp, 100 ohms, 1/2 W, RC20BF101M	271-101
R-249	Discr. Cathode	SAME AS R-205	
R-250	2nd Lim. Jack Voltage Dropping	SAME AS R-201	270-564
R-251	Coupling from Z-208 to Z-209	Comp, 39,000 ohms, 1/2 W, RC20BF393K	270-393
R-252	Coupl. from Z209 to 210	SAME AS R-251	
R-253	Coupl. from Z211 to 212	SAME AS R-251	
R-254	Coupl. from Z212 to 213	SAME AS R-251	
R-255	2nd Mixer Plate	SAME AS R-237	
R-256	Discr. Output Divider	Comp, 68,000 ohms, 1/2 W, RC20BF683K	270-683
R-257	Noise Rect. Plate	SAME AS R-231	
R-258	AF Amp Cathode	Comp, 270 ohms, 1/2 W, RC20BF271K	270-271
R-259	Discr. Output Divider	Comp, 220,000 ohms, 1/2 W, RC20BF224K	270-224

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ET-8040 ELECTRICAL PARTS LIST

RECEIVER "A"

Reference Drawing G-110

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	SWITCHES		
S-201	Receiver Channel	Solenoid operated, 8 bakelite wafers, 6 positions.	328-267
	TRANSFORMERS		
T-201	---------- PART OF Z-206 ----------		
T-202	---------- PART OF Z-207 ----------		
T-203	---------- PART OF Z-208 ----------		
T-204	---------- PART OF Z-209 ----------		
T-205	---------- PART OF Z-210 ----------		
T-206	---------- PART OF Z-211 ----------		
T-207	---------- PART OF Z-212 ----------		
T-208	---------- PART OF Z-213 ----------		
T-209	---------- PART OF Z-214 ----------		
T-210	---------- PART OF Z-215 ----------		
T-211	---------- PART OF Z-216 ----------		
T-212	NOT USED		
T-213	Output Transformer		349-005
	VACUUM TUBES		
V-201	1st RF Amp.	Sharp-Cutoff Pentode	352-222
V-202	2nd RF Amp.	SAME AS V-201	
V-203	1st Mixer	SAME AS V-201	
V-204	High IF Amp.	SAME AS V-201	
V-205	2nd Mixer	SAME AS V-201	
V-206	1st IF Amp.	SAME AS V-201	
V-207	2nd IF Amp.	SAME AS V-201	
V-208	1st Limiter	SAME AS V-201	
V-209	2nd Limiter	SAME AS V-201	
V-210	Discriminator	Twin Diode	352-222
V-211	Noise Rectifier	Hi-Mu Twin Triode	352-495
V-212	Squelch Cont.-AF Amp.	SAME AS V-211	
V-213	Power Output	Power Pentode	352-217
V-214	Multiplier	SAME AS V-201	
V-215	Oscillator Doubler	SAME AS V-201	
	SOCKETS		
XV-201	V-201 Tube	7 pin miniature	261-540
XV-202	V-202 Tube	SAME AS XV-201	
XV-203	V-203 Tube	SAME AS XV-201	
XV-204	V-204 Tube	7 pin miniature	261-650
XV-205	V-205 Tube	SAME AS XV-204	
XV-206	V-206 Tube	SAME AS XV-204	
XV-207	V-207 Tube	SAME AS XV-204	
XV-208	V-208 Tube	SAME AS XV-204	
XV-209	V-209 Tube	SAME AS XV-204	
XV-210	V-210 Tube	SAME AS XV-204	

RECEIVER "A"
Reference Drawing G-110

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	SOCKETS (Cont'd)		
XV-211	V-211 Tube	Noval	261-559
XV-212	V-212 Tube	SAME AS XV-211	
XV-213	V-213 Tube	SAME AS XV-204	
XV-214	V-214 Tube	SAME AS XV-204	
XV-215	V-215 Tube	SAME AS XV-201	
XY-201	Channel 4 Crystal	Eby 9006	261-832
XY-202	Channel 2 Crystal	SAME AS XY-201	
XY-203	Channel 3 Crystal	SAME AS XY-201	
XY-204	Channel 1 Crystal	SAME AS XY-201	
XY-205	Channel 5 Crystal	SAME AS XY-201	
XY-206	Channel 6 Crystal	SAME AS XY-201	
	NETWORKS		
Z-201	1st RF Amp Cath. Tuning	Coil Assembly	010-366
Z-202	1st RF Amp Pl. Tuning	Coil Assembly	010-367
Z-203	2nd RF Amp Grid Tuning	Coil Assembly	010-368
Z-204	2nd RF Amp Pl. Tuning	Coil Assembly	010-369
Z-205	1st Mixer Grid Tuning	SAME AS Z-203	
Z-206	1st High IF	Transformer	350-344
Z-207	2nd High IF	SAME AS Z-206	
Z-208	2nd Mixer Tuning	Transformer	350-346
Z-209	2nd Mixer Tuning	SAME AS Z-208	
Z-210	2nd Mixer Tuning	SAME AS Z-208	
Z-211	1st IF Amp Tuning	SAME AS Z-208	
Z-212	1st IF Amp Tuning	SAME AS Z-208	
Z-213	1st IF Amp Tuning	SAME AS Z-208	
Z-214	2nd IF Amp Tuning	SAME AS Z-208	
Z-215	1st Limiter Tuning	SAME AS Z-208	
Z-216	2nd Limiter Tuning	Transformer	350-348
Z-217	Multiplier Tuning	Coil Assembly	010-370
Z-218	Multiplier Tuning	Coil Assembly	010-371
Z-219	Osc. Doubler Tuning	SAME AS Z-206	

SECTION 7
ET-8040 ELECTRICAL PARTS LIST

RECEIVER "B"
Reference Drawing G-115

CAPACITORS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
C-301	1st RF Grid Bypass	250 mmfd	073-514
C-302	NOT USED		
C-303	---------- PART OF Z-301 ----------		
C-304	---------- PART OF Z-302 ----------		
C-305	1st RF Fil. Bypass	SAME AS C-301	
C-306	---------- PART OF Z-303 ----------		
C-307	Coupl. from Z302 to 303	6 mmfd	073-150
C-308	1st RF Amp Pl. Bypass	SAME AS C-301	
C-309	2nd RF Amp Cath. Bypass	SAME AS C-301	
C-310	2nd RF Amp Coupling	Fixed, ceramic, insulated, 33 mmfd, 500 V	073-356
C-311	---------- PART OF Z-304 ----------		
C-312	---------- PART OF Z-305 ----------		
C-313	1st Mixer Coupling	SAME AS C-310	
C-314	2nd RF Amp Pl. Bypass	SAME AS C-301	
C-315	AF Grid Coupling	Fixed, ceramic, insulated, 680 mmfd, 350 V	073-508
C-316	1st Mixer Cathode Bypass	SAME AS C-301	
C-317	---------- PART OF Z-306 ----------		
C-318	---------- PART OF Z-306 ----------		
C-319	High IF Amp Coupling	Fixed, ceramic, insulated, 100 mmfd, 500 V	073-134
C-320	1st Mixer Screen Bypass	Fixed, ceramic, insulated, 1500 mmfd, 350 V	073-640
C-321	NOT USED		
C-322	NOT USED		
C-323	High IF Amp Scr. Bypass	SAME AS C-320	
C-324	---------- PART OF Z-307 ----------		
C-325	---------- PART OF Z-308 ----------		
C-326	2nd Mixer Coupling	SAME AS C-310	
C-327	2nd Mixer Cathode Bypass	SAME AS C-320	
C-328	2nd Mixer Scr. Bypass	Fixed, ceramic, flat disc, .01 mfd, 450 V DC	074-150
C-329	---------- PART OF Z-308 ----------		
C-330	---------- PART OF Z-308 ----------		
C-331	NOT USED		
C-332	---------- PART OF Z-309 ----------		
C-333	---------- PART OF Z-309 ----------		
C-334	NOT USED		
C-335	---------- PART OF Z-310 ----------		
C-336	---------- PART OF Z-310 ----------		
C-337	1st IF Amp Grid Coupl.	SAME AS C-319 ----------	
C-338	---------- PART OF Z-311 ----------		
C-339	---------- PART OF Z-311 ----------		
C-340	2nd IF Amp Pl. Bypass	Fixed, paper, tubular, .033 mfd, 400 V	074-179
C-341	---------- PART OF Z-312 ----------		
C-342	---------- PART OF Z-312 ----------		

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ET-8040 ELECTRICAL PARTS LIST

RECEIVER "B"
Reference Drawing G-115

CAPACITORS (Cont'd)

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
C-343	2nd Lim. Jack Filter	SAME AS C-328	
C-344	---------- PART OF Z-313 ----------		
C-345	---------- PART OF Z-313 ----------		
C-346	1st IF Amp Scr. Bypass	SAME AS C-328	
C-347	AVC Filter	SAME AS C-319	
C-348	AVC Filter	SAME AS C-328	
C-349	1st Lim. Jack Filter	SAME AS C-328	
C-350	2nd IF Screen Bypass	SAME AS C-328	
C-351	---------- PART OF Z-314 ----------		
C-352	---------- PART OF Z-314 ----------		
C-353	1st Lim. Grid Bypass	Fixed, ceramic, insulated, 51 mmfd, 500 V	073-428
C-354	1st Lim. Pl & Scr Bypass	SAME AS C-328	
C-355	---------- PART OF Z-315 ----------		
C-356	---------- PART OF Z-315 ----------		
C-357	2nd Lim. Grid Bypass	SAME AS C-310	
C-358	2nd Lim. P; & Scr Bypass	SAME AS C-328	
C-359	Noise Rect. Coupling	SAME AS C-319	
C-360	---------- PART OF Z-316 ----------		
C-361	T-311 Tuning	82 mmfd	073-490
C-362	T-311 Tuning	SAME AS C-361	
C-363	Discrim. Cathode	Fixed, mica, molded, 220 mmfd, 500 V, CM15D221K	073-330
C-364	Noise Rect. Filter	SAME AS C-228	
C-365	Noise Rect. Filter	Fixed, paper, tubular, .047 mfd, 200 V	074-344
C-366	Discr. Output Coupling	Fixed, ceramic, flat disc high "K" type, .005 mfd, 500 V	073-283
C-367	Squelch Cont. Pl. Bypass	SAME AS C-328	
C-368		Dry electrolytic, can type, 3 section 20/20/20 mfd, 400/400/25 V	077-288
C-368A	AF Amp Cath. Bypass	ONE SECTION OF C-368	
C-368B	AF Amp B+ Decoupling	ONE SECTION OF C-368	
C-368C	Power Output Cathode	ONE SECTION OF C-368	
C-369	Osc. Doubler Bypass	Fixed, ceramic, non-insulated, 8 mmfd ±1 mmfd	073-174
C-370	AF Amp Coupling	1500 mmfd, 500 V	073-640
C-371	Osc. Doubler Scr. Bypass	SAME AS C-315	
C-372	---------- ONE SECTION OF Z-319 ----------		
C-373	---------- ONE SECTION OF Z-319 ----------		
C-374	Osc. Doubler Plate Decoupling	SAME AS C-320	
C-375	2nd Mixer Osc. Coupl.	Fixed, .68 mmfd, 500 V	073-018
C-376	1st Mixer, Mult. Coupl.	1.5 mmfd	073-036
C-377	---------- ONE SECTION OF Z-317 ----------		
C-378	---------- ONE SECTION OF Z-318 ----------		
C-379	Multiplier Scr. Bypass	SAME AS C-320	
C-380	Osc. Doubler Coupl.	SAME AS C-310	

ET-8040 ELECTRICAL PARTS LIST

RECEIVER "B"
Reference Drawing G-115

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS (Cont'd)		
C-381	Crystal Coupling	SAME AS C-320	
C-382	Crystal Bypass	Fixed, ceramic, non-insulated, 82 mmfd, 500 V	073-490
C-383	NOT USED		
C-384	J-302 Filter	1500 mmfd	073-640
C-385	Coupl. from Z304 to 305	SAME AS C-307	
C-386	Filter J-301	SAME AS C-328	
C-387	Coupl. from Z317 to 318	SAME AS C-307	
C-388	1st IF Amp Cath. Bypass	SAME AS C-328	
C-389	Power Output Coupling	SAME AS C-366	
C-390	Power Output Grid Bypass	470 mmfd	073-331
C-391	Noise Rect. Pl. Coupling	33 mmfd	073-356
C-392	AVC Filter	SAME AS C-328	
C-393	Crystal Trimmer	4-30 mmfd, N-500	078-016
C-394	Crystal Trimmer	SAME AS C-393	
	JACKS		
J-301	Discriminator	Tip, black, round insulated head	259-819
J-302	Multiplier	SAME AS J-301	
J-303	2nd Limiter	SAME AS J-301	
J-304	1st Limiter	SAME AS J-301	
J-305	Antenna	Connector, female, coaxial	258-282
	RELAYS		
K-301	Channel Switching	DPDT, 24 V DC 400 ohm Coil	265-398
	INDUCTORS		
L-301	---------- PART OF Z-301 ----------		
L-302	1st RF Amp Filter Choke	Reactor, axial leads, 1.8 uh, 1000 ma	348-209
L-303	---------- ONE SECTION OF Z-302 ----------		
L-304	---------- ONE SECTION OF Z-303 ----------		
L-305	---------- ONE SECTION OF Z-304 ----------		
L-306	---------- ONE SECTION OF Z-305 ----------		
L-307	---------- ONE SECTION OF Z-317 ----------		
L-308	---------- ONE SECTION OF Z-318 ----------		

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ET-8040 ELECTRICAL PARTS LIST

RECEIVER "B"

Reference Drawing G-115

PLUGS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
P-301	Receiver "B"	Connector, male, 8 contacts, knife switch type	260-298

RESISTORS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
R-301	1st RF Amp Grid	Comp, 560,000 ohms, 1/2 W, RC20BF564K	270-564
R-302	1st RF Amp Plate	Comp, 22,000 ohms, 1 W, RC30BF223M	274-223
R-303	NOT USED		
R-304	2nd RF Amp Cathode	Comp, 1500 ohms, 1/2 W, RC20BF152M	271-152
R-305	2nd RF Amp Screen	Comp, 47,000 ohms, 1/2 W, RC20BF473M	271-473
R-306	2nd RF Amp Grid	SAME AS R-301	
R-307	1st Mixer Grid	SAME AS R-305	
R-308	1st Mixer Cathode	Comp, 1000 ohms, 1/2 W, RC20BF102M	271-102
R-309	1st Mixer Screen	Comp, 100,000 ohms, 1/2 W, RC20BF104M	271-104
R-310	Noise Rect. Grid	SAME AS R-309	
R-311	High IF Amp Grid	SAME AS R-309	
R-312	Noise Rect. Grid	SAME AS R-301	
R-313	High IF Amp Plate	Comp, 47,000 ohms, 1 W, RC30BF473M	274-473
R-314	2nd Mixer Grid	SAME AS R-309	
R-315	2nd Mixer Cathode	SAME AS R-304	
R-316	2nd Mixer Screen	SAME AS R-313	
R-317	1st IF Amp Grid	Comp, 220,000 ohms, 1/2 W, RC20BF224M	271-224
R-318	1st IF Amp Screen	SAME AS R-302	
R-319	2nd IF Amp Grid	SAME AS R-317	
R-320	Power Output Grid	SAME AS R-301	
R-321	AVC Filter	Comp, 1 Megohm, 1/2 W, RC20BF105M	271-105
R-322	2nd IF Amp Pl. & Scr.	SAME AS R-313	
R-323	1st Limiter Grid	SAME AS R-309	
R-324	1st Lim. Pl. & Scr.	SAME AS R-313	
R-325	2nd Limiter Grid	SAME AS R-309	
R-326	2nd Lim. PL. & Scr.	SAME AS R-313	
R-327	Discriminator Plate	SAME AS R-309	
R-328	Discriminator Plate	SAME AS R-309	
R-329	AF Amp Grid	SAME AS R-321	
R-330	Squelch Control Grid	SAME AS R-321	
R-331	AF Amp Cathode Voltage Divider	Comp, 270,000 ohms, 1/2 W, RC20BF274K	270-274
R-332	AF Amp Cathode Voltage Divider	Comp, 47,000 ohms, 1 W, RC30BF473K	273-473
R-333	Squelch Control Plate	SAME AS R-331	

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RECEIVER "B"
Reference Drawing G-115

RESISTORS (Cont'd)

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
R-334	Multiplier Grid	Comp, 56 ohms, 1/2 W, RC20BF560K	270-560
R-335	Audio Amp Cathode	Comp, 22,000 ohms, 1/2 W, RC20BF223K	270-223
R-336	Squelch Control AF Amp Cathode	Comp, 8200 ohms, 1/2 W, RC20BF822K	270-822
R-337	AF Amp Plate	Comp, 10,000 ohms, 1/2 W, RC20BF103M	271-103
R-338	AF Amp Plate	Comp, 270,000 ohms, 1/2 W, RC20BF274K	270-274
R-339	Power Output Cathode	Comp, 560 ohms, 1/2 W, RC20BF561K	270-561
R-340	1st Limiter Grid	SAME AS R-301	
R-341	Multiplier Screen	22,000 ohms, RC20BF223M	271-223
R-342	Multiplier Grid	SAME AS R-301	
R-343	Osc. Doubler Plate	SAME AS R-313	
R-344	Osc. Doubler Screen	SAME AS R-305	
R-345	Osc. Doubler Grid	SAME AS R-317	
R-346	Noise Rect. Cathode	SAME AS R-321	
R-347	J-302 Dropping	SAME AS R-301	
R-348	1st IF Amp Cathode	Comp, 100 ohms, 1/2 W, RC20BF101M	271-101
R-349	Discriminator Cathode	SAME AS R-305	
R-350	2nd Lim. Jack Voltage Dropping	SAME AS R-301	
R-351	Coupl. from Z308 to 309	Comp, 39,000 ohms, 1/2 W, RC20BF393K	270-393
R-352	Coupl. from Z309 to 310	SAME AS R-351	
R-353	Coupl. from Z311 to 312	SAME AS R-351	
R-354	Coupl. from Z312 to 313	SAME AS R-351	
R-355	2nd Mixer Plate	SAME AS R-337	
R-356	Discr. Output Divider	Comp, 68,000 ohms, 1/2 W, RC20BF683K	270-683
R-357	Noise Rect. Plate	SAME AS R-331	
R-358	AF Amp Cathode	Comp, 270 ohms, 1/2 W, RC20BF271K	270-271
R-359	Discr. Output Divider	Comp,220,000 ohms, 1/2 W, RC20BF224K	270-224

TRANSFORMERS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
T-301	---------- PART OF Z-306 ----------		
T-302	---------- PART OF Z-307 ----------		
T-303	---------- PART OF Z-308 ----------		
T-304	---------- PART OF Z-309 ----------		
T-305	---------- PART OF Z-310 ----------		
T-306	---------- PART OF Z-311 ----------		

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ET-8040 ELECTRICAL PARTS LIST

RECEIVER "B"

Reference Drawing G-115

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	TRANSFORMERS (Cont'd)		
T-307	---------- PART OF Z-312 ----------		
T-308	---------- PART OF Z-313 ----------		
T-309	---------- PART OF Z-314 ----------		
T-310	---------- PART OF Z-315 ----------		
T-311	---------- PART OF Z-316 ----------		
T-312	NOT USED		
T-313	Output Transformer		349-005
	VACUUM TUBES		
V-301	1st RF Amp.	Sharp Cut-off Pentode 6BH6	352-257
V-302	2nd RF Amp.	SAME AS V-301	
V-303	1st Mixer	SAME AS V-301	
V-304	High IF Amp.	SAME AS V-301	
V-305	2nd Mixer	SAME AS V-301	
V-306	1st IF Amp.	SAME AS V-301	
V-307	2nd IF Amp.	SAME AS V-301	
V-308	1st Limiter	SAME AS V-301	
V-309	2nd Limiter	SAME AS V-301	
V-310	Discriminator	Twin Diode 6AL5	352-222
V-311	Noise Rectifier	Hi Mu Twin Triode 12AX7	352-495
V-312	Squelch Cont. AF Amp.	SAME AS V-311	
V-313	Power Output	Power Pentode 6AK6	352-217
V-314	Multiplier	SAME AS V-301	
V-315	Oscillator Doubler	SAME AS V-301	
	SOCKETS		
XV-301	V-301 Tube	7 pin miniature	261-540
XV-302	V-302 Tube	SAME AS XV-301	
XV-303	V-303 Tube	SAME AS XV-301	
XV-304	V-304 Tube	7 pin miniature	261-650
XV-305	V-305 Tube	SAME AS XV-304	
XV-306	V-306 Tube	SAME AS XV-304	
XV-307	V-307 Tube	SAME AS XV-304	
XV-308	V-308 Tube	SAME AS XV-304	
XV-309	V-309 Tube	SAME AS XV-304	
XV-310	V-310 Tube	SAME AS XV-304	
XV-311	V-311 Tube	Noval	261-559
XV-312	V-312 Tube	SAME AS XV-311	
XV-313	V-313 Tube	SAME AS XV-304	
XV-314	V-314 Tube	SAME AS XV-304	
XV-315	V-315 Tube	SAME AS XV-301	
XY-301	Channel 7 Crystal	Eby 9006	261-832
XY-302	Channel 8 Crystal	SAME AS XY-301	

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ET-8040 ELECTRICAL PARTS LIST

RECEIVER "B"
Reference Drawing G-115

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	NETWORKS		
Z-301	1st RF Amp Cath. Tuning	Coil Assembly	010-366
Z-302	1st RF Amp Plate Tuning	Coil Assembly	010-367
Z-303	2nd RF Amp Grid Tuning	Coil Assembly	010-368
Z-304	2nd RF Amp Plate Tuning	Coil Assembly	010-369
Z-305	1st Mixer Grid Tuning	SAME AS Z-303	
Z-306	1st High IF Tuning	Transformer	350-344
Z-307	2nd High IF Tuning	SAME AS Z-306	
Z-308	2nd Mixer Tuning	Transformer	350-346
Z-309	2nd Mixer Tuning	SAME AS Z-308	
Z-310	2nd Mixer Tuning	SAME AS Z-308	
Z-311	1st IF Amp Tuning	SAME AS Z-308	
Z-312	1st IF Amp Tuning	SAME AS Z-308	
Z-313	1st IF Amp Tuning	SAME AS Z-308	
Z-314	2nd IF Amp Tuning	SAME AS Z-308	
Z-315	1st Limiter Tuning	SAME AS Z-308	
Z-316	2nd Limiter Tuning	Transformer	350-348
Z-317	Multiplier Tuning	Coil Assembly	010-370
Z-318	Multiplier Tuning	Coil Assembly	010-371
Z-319	Osc. Doubler Tuning	SAME AS Z-306	

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POWER SUPPLY

Reference Drawing G-119

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS		
C-401	24 V Filter Rect. Output	50 mfd, 50 V	075-790
C-402	24 V Filter Rect. Output	25 mfd, 50 V	075-706
C-403	200 V Rect. Filter Output	1.0 mfd	075-208
C-404	200 V Rect. Filter Output	SAME AS C-403	
C-405	300 V Rect. Filter Output	SAME AS C-403	
C-406	300 V Rect. Filter Output	SAME AS C-403	
C-407	Phase Correction 300 V Primary Plate	SAME AS C-403	
	FUSES		
F-401	24 V Circuit	Fast blo glass cartridge, 1 Amp, 250 V	146-117
F-402	Filament Circuit	Fast blo glass cartridge, 1-1/2 Amp, 250 V	146-159
F-403	Trans. Plate Circuit	SAME AS F-401	
F-404	Receiver B+	Fast blo glass cartridge, 1/2 Amp, 250 V	146-075
	JACKS		
J-401	Transmitter	Connector, female, 33 contacts, knife switch type	261-618
J-402	Receiver "A"	Connector, female, 30 contacts, knife switch type	261-617
J-403	Receiver "B"	Connector, female, 8 contacts, knife switch type	261-629
J-404	Hand Test Set	Phone, 3 circuit	259-207
J-405	Meter Panel	Connector, female, 6 contacts	261-633
J-406	Speaker Ringer	Socket, female, octal type	261-542
	RELAY		
K-401	Operate and Standby	5PDT plus SPST, normally closed, 24 V DC, 250 Ohm coil Advance #6016-2, spec 35898	
	REACTORS		
L-401	300 V Rect. Output Filter	1.0 henry, 36 ohms, 200 ma	349-437
L-402	300 V Rect. Output Filter	SAME AS L-401	
L-403	200 V Rect. Output Filter	SAME AS L-401	
L-404	200 V Rect. Output Filter	SAME AS L-401	

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ET-8040 ELECTRICAL PARTS LIST

POWER SUPPLY

Reference Drawing G-119

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	RESISTORS		
R-401	300 V Supply Neg. (Bias)	Comp, 100 ohms, 2 W, RC40BF101K	276-101
R-402	Volt. Divider Test Set output	Comp, 3 ohms, 1 W	278-074
R-403	Volt. Divider Test Set Output	Comp, 1 ohm, 1 W	278-028
R-404	Volt. Dropping Ringer Socket	Comp, 39,000 ohms, 1/2 W, RC20BF393K	270-393
R-405	24 V Supply Voltage Dropping Ringer Socket	Comp, 25 ohms, 20 W	278-299
R-406	Squelch Control Ringer Operation	Comp, 24,000 ohms, 1/2 W, RC20BF243J	269-243
	SELENIUM RECTIFIER		
SE-401	Rectifier	Output 24 V, 1.38 Amp Vickers Elec. B2ERM1EV	263-045
	TRANSFORMERS		
T-401	24 V Power Supply	400 Cycles pri: 120V/115V/110V/105V sec: 25/29/33 V, Kenyon S-24411 #1 "T" line case.	
T-402	Filament Supply Receiver "A"	400 Cycles pri: 120V/115V/110V/105V sec: 6.3 V, 3.1 Amp	349-450
T-403	Filament Supply Receiver "B"	SAME AS T-402	
T-404	24 V Power Supply	400 Cycles pri: 120V/115V/110V/105V sec: 6.3 V, 1.2 Amp	349-449
T-405	300 V Plate Supply	400 cycle pri: 120V/115V/110V/105V sec: 480 V C.T. at 50 ma	349-453
T-406	200 V Supply	Bri: 120V/115V/110V/105V sec 1: 6.3 V at .6 Amp " 2: 490 V C.T. at 67 ma RMS	349-452
	TERMINAL BOARD		
TB-401	M. G. Term. Connector	Blk Phenolic, barrier type, 5 feed through screw term.	036-049
TB-402	Control Unit	Blk Phenolic, barrier type, 6 feed through screw term.	036-060
TB-403	Control Unit	Blk Phenolic, barrier type, 21 feed through screw term.	21-140-T
TB-404	Speaker Ringer	Movable Link, 3 screws attached.	208-144

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POWER SUPPLY

Reference Drawing G-119

VACUUM TUBES

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
V-401	Rectifier, 200 V P. S.	Full wave, high vacuum rectifier (mih. type) 6X4	352-423
V-402	Rectifier, 300 V P. S.	SAME AS V-401	
V-403	Rectifier, 300 V P. S.	SAME AS V-401	

FUSE HOLDERS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
XF-401	F-401, F-402, F-403 and F-404 fuses	Clip type for 3AG fuse, solder lug terminals, 4 pole.	172-446

SOCKETS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
XV-401	V-401 Tube	7 pin miniature, mica filled bakelite.	261-331
XV-402	V-402 Tube	SAME AS XV-401	
XV-403	V-403 Tube	SAME AS XV-401	

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METER PANEL

Reference Drawing G-119

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
M-501	Meter	0-130 V AC, 400 cycles	212-835
P-501	Plug	Connector, male, 6 contacts	260-295
R-501	Alt. Field Rheostat	115 V DC, 500 ohms, 10%, 50 W	244-295
		115/230 V AC, 150 ohms, 10%, 50 W	244-145
		32 V DC, 22 ohms, 10%, 50 W	244-388
S-501	Power Switch	Flush toggle, DPST	328-538

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CONTROL UNIT

Reference Drawing G-119

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	HANDSET		
HS-601	Voice Operation Only Push Button & Voice Oper.	F1-AW-3 Western Electric F3-AW-3 Western Electric	166-015
	INDICATING LAMPS		
I-601	Channel 1 Indicator	6-8 Volts	202-253
I-602	Channel 2 Indicator	SAME AS I-601	
I-603	Channel 3 Indicator	SAME AS I-601	
I-604	Channel 4 Indicator	SAME AS I-601	
I-605	Channel 5 Indicator	SAME AS I-601	
I-606	Channel 6 Indicator	SAME AS I-601	
I-607	Channel 7 Indicator	SAME AS I-601	
I-608	Channel 8 Indicator	SAME AS I-601	
	LAMP SOCKETS		
IX-601	For I-601 Lamp	500 U series, miniature bayonet socket receptacles	262-145
IX-602	For I-602 Lamp	SAME AS IX-601	
IX-603	For I-603 Lamp	SAME AS IX-601	
IX-604	For I-604 Lamp	SAME AS IX-601	
IX-605	For I-605 Lamp	SAME AS IX-601	
IX-606	For I-606 Lamp	SAME AS IX-601	
IX-607	For I-607 Lamp	SAME AS IX-601	
IX-608	For I-608 Lamp	SAME AS IX-601	
	RESISTORS		
R-601	Volt. Dropping Push Button 1	Comp, 56 ohms, 2 W, RC40BF560K	276-560
R-602	Volt. Dropping Push Button 2	SAME AS R-601	
R-603	Volt. Dropping Push Button 3	SAME AS R-601	
R-604	Volt. Dropping Push Button 4	SAME AS R-601	
R-605	Volt. Dropping Push Button 5	SAME AS R-601	
R-606	Volt. Dropping Push Button 6	SAME AS R-601	
R-607	Volt. Dropping Receiver "B" Switch	Wire wound, 100 ohms, 5 W, Koolohm 5KT	278-436
R-608	Volt. Dropping Receiver "B" Switch	SAME AS R-607	
R-609	Volt. Dropping Push Button 7	Wire wound, 120 ohms, 5 W, BLULO	278-464
R-610	Voltage Dropping Push Button 8	SAME AS R-609	

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

CONTROL UNIT

Reference Drawing G-119

RESISTORS (Cont'd)

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
R-611	Voltage Divider for Receiver "B" Switch	Wire wound, 25 ohms, 20 W, BROHI	278-299
R-612	Dimmer Control Rheostat	100 ohms, 25 W	244-177
R-613	Squelch Control	Potentiometer, 25,000 Ohms	244-490
R-614	Vol. Control Attenuator	"L" pad attenuator, 6 ohms	244-033
R-615	Voltage Divider for Handset	Comp, 3 ohms, 1 W, RC30BF030K	273-030
R-616	Voltage Divider for Handset	Comp, 1 ohm, 1 W, RC30BF010K	273-010

SWITCHES

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
S-601	Switch	C/H SPST	328-605
S-602	Switch	SAME AS S-601	
S-603	Switch	SAME AS S-601	
S-604	Switch	SAME AS S-601	
S-605	Switch	SAME AS S-601	
S-606	Switch	SAME AS S-601	
S-607	Switch	SAME AS S-601	
S-608	Switch	SAME AS S-601	
S-609	Switch	Mallory 3242-J	328-509
S-610	Handset Switch	Roanwell, stype #341 with #311 hanger and #9607 switch	

TERMINAL BOARDS

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
TB-601	Power Unit	14 terminals, barrier type, black phenolic.	036-129
TB-602	Power Unit	SAME AS TB-601	
TB-603	Speaker	2 terminals, barrier type, black phenolic	036-010

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

115 VOLT DC MOTOR GENERATOR UNIT

Reference Drawing G-119

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS		
C-701	Filter	Paper, 3 X .1 mfd, 600 V CP67B5DF104X	071-309
C-702	Filter	SAME AS C-701	
C-703	Filter	Mica, .01 mfd, 1200 V	074-122
C-704	Filter	SAME AS C-703	
	FUSES		
F-701	Output	Glass cartridge, 3 A, 250 V	146-195
F-702	Output	SAME AS F-701	
	INDUCTORS		
L-701	Filter Choke	14 microhenries, 5 A, 0.15 ohms with mtg. bkt.	348-075
L-702	Filter Choke	SAME AS L-701	
L-703	Filter Choke	SAME AS L-701	
	MOTOR GENERATOR		
MG-701	Generator	Motor Alt., 115 V DC, 115 V 400 cycles, P. F. 1, 140 W cont. (180 W 5 min out of 20 min) single phase Radiomarine Spec B-333	214-
	TERMINAL BOARD		
TB-701	Unit Interconnection	8 screw terminals, black phenolic, barrier type	036-077
	FUSE HOLDERS		
XF-701	Output fuse	3 AG fuse clip type, solder lug terminals, bakelite base, 2 pole	172-440
XF-702	Output fuse	PART OF XF-701	

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

SPEAKER "A"

Reference Drawing G-119

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
LS-801	Receiver "A" Standby Output	PM loudspeaker, elliptical 4 X 6 perm. magnet, voice coil impedance 3.2 ohms, max. input volt amps. - 3 watts 100 to 1000 cycles - 1.25 V RMS on voice coil.	308-190
TB-801	Receiver "A" Loudspeaker Terminal Board	Barrier type, 4 screw terminals, black phenolic.	036-034

SECTION 7
ET-8040 ELECTRICAL PARTS LIST

RM-189 "B" SPEAKER UNIT
Reference Drawing G-119

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
LS-901	Optional "B" Receiver Standby Output.	PM loudspeaker, elliptical 4 X 6, perm. magnet, voice coil impedance 3.2 ohms, 3 watts max. input 100 to 1000 cycles-1.25 V RMS on voice coil.	308-190
	PLUG		
P-901	"B" Speaker Unit	8 contact ootal	260-263
	RESISTORS		
R-901	"B" Receiver Squelch Control	Potentiometer, 25,000 ohms, 1/4" bushing, 3/8" shaft	244-490
R-902	"B" Receiver Volume Control	Attenuator, 6 ohms, "L" pad	244-033
	TERMINAL BOARD		
TB-901	"B" Receiver Speaker Unit Connections	Barrier type, 4 terminals, black phenolic	036-034

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

115/230 VOLT AC MOTOR GENERATOR UNIT

Reference Drawings G-119 and B-373

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS		
C-1001	Filter	Paper, 3 X 0.1 mfd, 600 V, CP67B5DF104X	071-909
C-1002	Filter	SAME AS C-1001	
C-1003	M. G. Starting	Paper, 110/150 mmfd, 150 V	Elec. Spec Co.
C-1004	M. G. Running	12 mfd, 330 V	
	FUSES		
F-1001	Output	Glass cartridge, 3 A, 250 V	146-195
	RELAYS		
K-1001	M. G. Starting	MS2A, 230 V Coil, SPST, normally closed.	Elec. Spec Co.
	INDUCTORS		
L-1001	Filter Choke	14 microhenries, 5 amp, 0.15 ohms with mtg bkt	348-075
L-1002	NOT USED		
L-1003	Filter Choke	SAME AS L-1001	
	MOTOR GENERATOR		
MG-1001	400 Cycle Generator	Motor Alt., 115/230 V AC, 60 cycles, 1 phase input; 115 V, 400 cycles P.F. 1, 140 W cont. (180 W 5 min. out of 20 min.), single phase	214-
	RESISTORS		
R-1001	M. G. Field	Slide wire, 150 ohms, 5" X 15/16" V.I.T., one #204 terminal, one #604 slider	278-265
	RECTIFIER		
*SE-1001	Exciter	Bridge connected selenium rectifier, max. AC volts 130, 2.4 amp DC at 35° C.	263-043
	TRANSFORMER		
**T-1001	230 Volt Auto-transformer (For 230 V equipment only)	230/115 V, 50/60 cycles, 100 VA	348-050

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

115/230 VOLT AC MOTOR GENERATOR UNIT

Reference Drawings G-119 and B-373

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
		TERMINAL BOARDS	
TB-1001	Unit Interconnection	15 screw terminals, black phenolic, barrier type.	15-141
TB-1002	NOT USED		
*TB-1003	Exciter Connections	5 screw terminals, black phenolic, barrier type.	5-141
		FUSE HOLDERS	
XF-1001	Output Fuse	3 AG fuse clip type, solder lug terminals, bakelite base, 2 pole	Littelfuse 357002
XF-1002	Output Fuse	PART OF XF-1001	

* Used in the RM-207 and the RM-207A
** Used in the RM-207A

RM-207 is used for 115 Volt AC Operation
RM-207A is used for 230 Volt AC Operation

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

32 VOLT DC MOTOR GENERATOR UNIT

Reference Drawings G-119 and B-419

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	CAPACITORS		
C-1101	Filter	Paper, 3 X 0.1 nfd, 600 V, CP67B5DF104X	071-809
C-1102	Filter	SAME AS C-1101	
C-1103	Filter	Mica, .01 mfd, 1200 V	074-122
C-1104	Filter	SAME AS C-1103	
	FUSES		
F-1101	Output	Glass cartridge, 3 amps, 250 V	146-195
F-1102	Output	SAME AS F-1101	
	RELAYS		
K-1101	M. G. Starting	SPST, normally open, 32 V DC, 400 ohm coil	265-252
	INDUCTORS		
L-1101	Filter Choke	14 microhenries, 5 A, 0.15 ohms with mtg. bkt.	348-075
L-1102	Filter Choke	SAME AS L-1101	
L-1103	Filter Choke	15 microhenries, 10 A, 0.07 ohms with mtg. bkt.	348-079
	MOTOR GENERATOR		
MG-1101	400 Cycle Generator	Motor Alt., 32 V DC input, 115 V 400 cycles, P. F. 1, 140 W cont. (180 W 5 min. our of 20 min) single phase. Radiomarine Spec B-332	214-
	RESISTORS		
R-1101	M. G. Field	Slide wire, 24 ohm, 5" X 15/16" V.I.T., one #204 terminal one #604 slider	278-263

SECTION 7

ET-8040 ELECTRICAL PARTS LIST

32 VOLT DC MOTOR GENERATOR UNIT
Reference Drawings G-119 and B-419

SYMBOL	FUNCTION	DESCRIPTION	RADIOMARINE STOCK NO.
	TERMINAL BOARD		
TB-1101	Unit Interconnection	8 screw terminal, black phenolic, barrier type	036-079
	FUSE HOLDERS		
XF-1101	Output Fuse	Panel mounted fuse holder. Bayonet type knob	172-048
XF-1102	Output Fuse	SAME AS XF-1101	

ET-8040 ELECTRICAL PARTS LIST

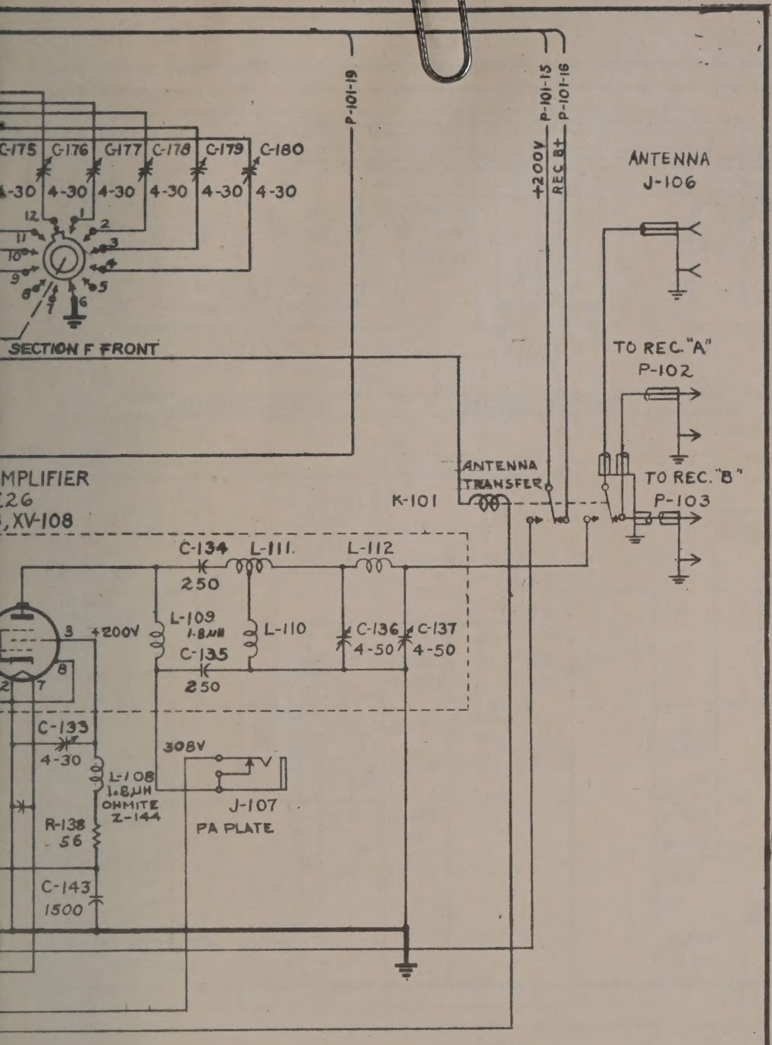
Miscellaneous External Parts

SYMBOL	FUNCTION	DESCRIPTION	TYPE
	Antenna		Amphenol #139-001
	Antenna Plug		Amphenol 82-G1
	Trans. Line Plug		Amphenol 83-1SP
	Line Switch		Federal #31322

PARTS USED WHEN ANTENNA LEAD-IN IS GREATER THAN 30 FEET

	Transmission Line Fitting	Reducer	Amphenol 82-56
	Transmission Line Fitting	Reducer	Amphenol 82-56
	Transmission Line Fitting	Plug	Amphenol 82-38
	Transmission Line Fitting	Plug	Amphenol 82-38

	SELECTIVE RINGER		Model 27


P-101-19
+200V
REC B+
P-101-15
P-101-16
ANTENNA
J-106
C-175
G-176
G-177
C-178
C-179
C-180
4-30
4-30
4-30
4-30
4-30
4-30
12
1
2
11
3
10
4
9
5
8
7
6
SECTION F FRONT
TO REC. "A"
P-102
MPLIFIER
26
, XV-108
ANTENNA
TRANSFER
K-101
TO REC. "B"
P-103
C-134
250
L-111
L-112
3
+200V
8
2
7
L-109
1.8μH
C-135
250
L-110
C-136
4-50
C-137
4-50
C-133
4-30
L-108
1.8μH
OHMITE
Z-144
R-138
56
C-143
1500
308V
J-107
PA PLATE

	APP'V'D	DATE	BY
RS	EWM	11-6-53	NJD
	TW	6-10-53	A.N.
	PM	4-9-53	S.S.
- REMOVE R-147	TW	2-17-53	NJD
	TW	1-19-53	FTM
FREQ. TABLE	PM	11-26-52	NJD
E-101, REVISED P-101, 15	PM	10-16-52	NJD
	PM	8-29-52	NJD
YER CONTROL CHANGES	PM	7-30-52	S.S.
RCUIT	LER	3-24-52	NJD
ED R-1388139	HJM	7-26-51	S.S.
	CB	6-15-50	CWC
ON			

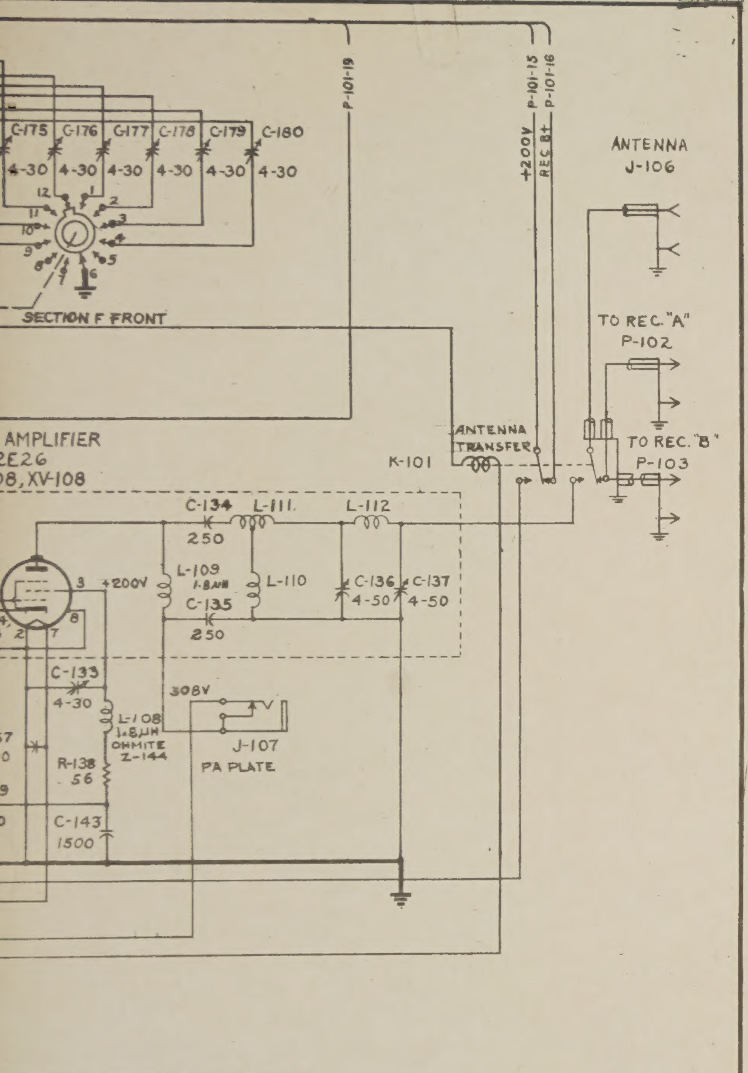
MODEL ET-8040
VHF RADIOTELEPHONE TRANSMITTER
SCHEMATIC

RADIOMARINE CORPORATION OF AMERICA

ENGINEERING DEPT.
NEW YORK, N. Y.

DRAWN C.W.C.
TRACED C.W.C.
CHECK'D GBF
APP'V'D GB
SUB. 12

G-114
DATE 1-24-49



C-175 C-176 C-177 C-178 C-179 C-180
4-30 4-30 4-30 4-30 4-30 4-30
SECTION F FRONT
P-101-19
+200V P-101-15
REC B+ P-101-16
ANTENNA
J-106
TO REC."A"
P-102
TO REC."B"
P-103
ANTENNA TRANSFER
K-101
AMPLIFIER
2E26
08, XV-108
C-134 L-111 L-112
250
+200V
L-109 1.8μH
L-110
C-135
250
C-136 4-50
C-137 4-50
C-133 4-30
L-108 1.8μH OHMITE Z-144
R-138 56
C-143 1500
308V
J-107
PA PLATE

	ERS	EWM	11-6-53	NJD
		TW	6-10-53	A.N.
		PM	4-9-53	S.S.
	E - REMOVE R-147	TW	2-17-53	NJD
	4	TW	1-19-53	FTM
	FREQ TABLE	PM	11-26-52	NJD
	F-101, REVISED P-101, 15	PM	10-16-52	NJD
		PM	8-29-52	NJD
	EYER CONTROL CHANGES	PM	7-30-52	S.S.
	CIRCUIT	LER	3-24-52	NJD
	GED R-138 & 139	HFM	7-26-51	S.S.
		CB	6-15-50	CWC
	TION	APP'V'D	DATE	BY

MODEL ET-8040
VHF RADIOTELEPHONE TRANSMITTER
SCHEMATIC

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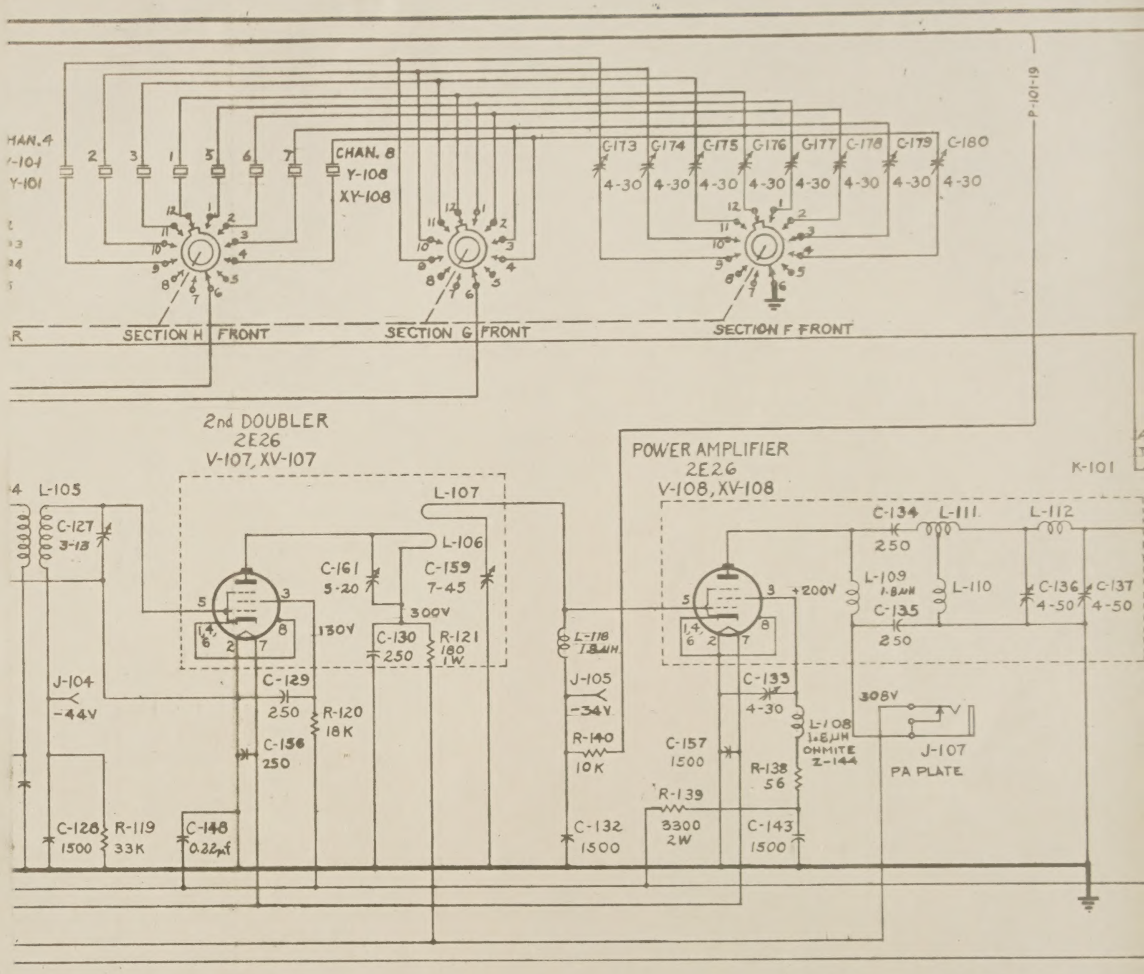
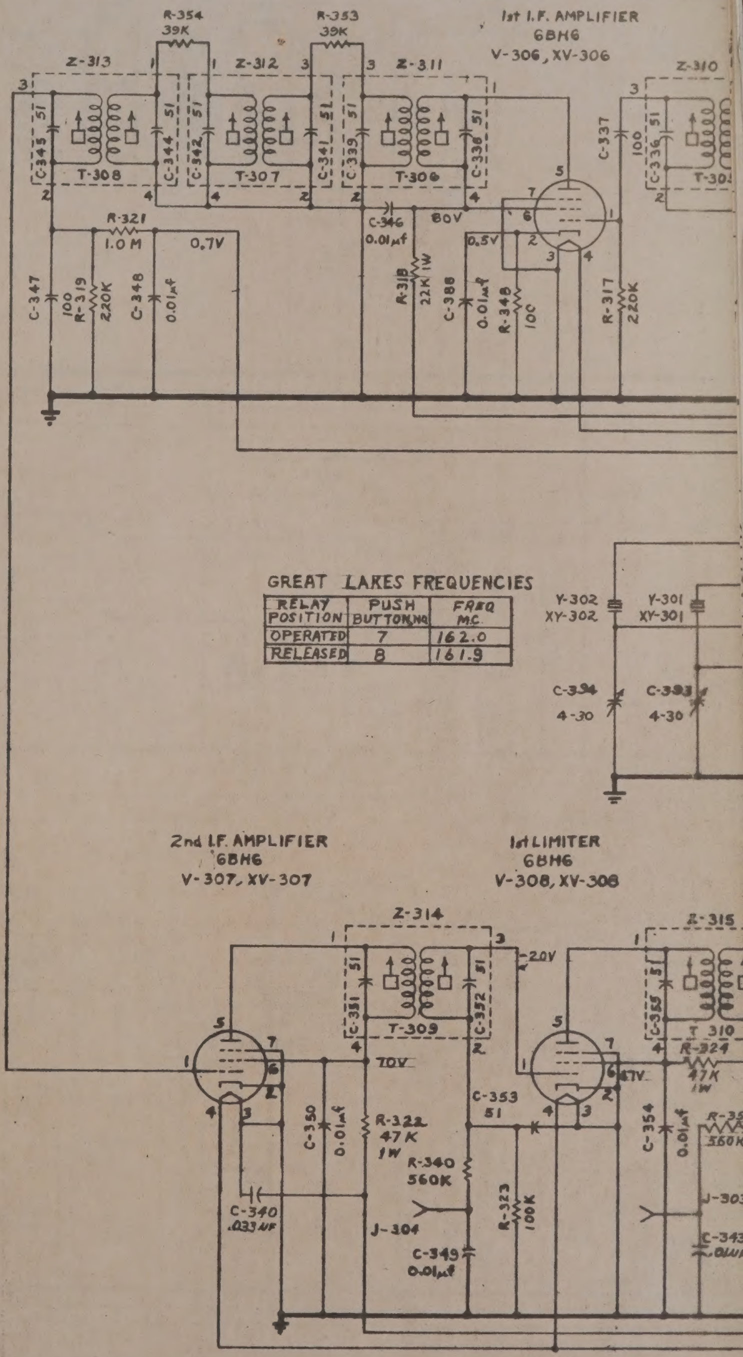


P-101-19
HAN. 4
-101
Y-101
2 3 1 5 6 7
CHAN. 8
Y-108
XY-108
C173 C174 C175 C176 C177 C178 C179 C180
4-30 4-30 4-30 4-30 4-30 4-30 4-30 4-30
SECTION H FRONT
SECTION G FRONT
SECTION F FRONT
2nd DOUBLER
2E26
V-107, XV-107
L-105
C-127 3-13
L-107
L-106
C-161 5-20
C-159 7-45
300V
130V
C-130 250
R-121 180 1W
J-104
-44V
C-129 250
R-120 18K
C-156 250
C-128 1500
R-119 33K
C-148 0.22μf
L-118 1.8μH
J-105
-34V
R-140 10K
C-132 1500
R-139 3300 2W
POWER AMPLIFIER
2E26
V-108, XV-108
K-101
C-134 L-111 L-112
250
+200V
L-109 1.8μH
L-110
C-135 250
C-136 4-50
C-137 4-50
C-133 4-30
L-108 1.8μH OHMITE Z-144
C-157 1500
R-138 56
C-143 1500
308V
J-107
PA PLATE

NOTES.
1. ALL VALUES EXPRESSED IN MICRO-MICROFARADS, MICROHENRIES AND OHMS UNLESS OTHERWISE SPECIFIED. ALL RESISTOR ARE ½W UNLESS OTHERWISE SPEC.
2. FRONT AND REAR WAFER SECTIONS VIEWED FROM SOLENOID END OF SWITCH. WAFERS ARE SHOWN IN STAND BY (POSITION #4)
3. REMOVE VODAS TUBE FOR PUSH BUTTON OPERATION.

SUB	DESCRIPTION	APP'V'D	DATE	BY
12	REVISE CHANNEL NUMBERS	EWM	11-6-53	NJD
11	REMOVED C-184	TW	6-10-53	A.N.
10	ADDED VOLTAGES	PM	4-9-53	S.S.
9	CORRECTED FREQ TABLE - REMOVE R-147	TW	2-17-53	NJD
8	F-101 WAS 2A; ADD C-184	TW	1-19-53	FTM
7	R-126 WAS 4300; ADD FREQ TABLE	PM	11-26-52	NJD
6	ADDED NOTE 3 & FUSE F-101, REVISED P-101, 15	PM	10-16-52	NJD
5	REVISED CKT. VALUES	PM	8-29-52	NJD
4	REVISED CKT. VALUES & KEYER CONTROL CHANGES	PM	7-30-52	S.S.
3	REVISED LIMITER CIRCUIT	LER	3-24-52	NJD
2	ADDED L-208 & CHANGED R-138 & 139	HFM	7-26-51	S.S.
1	REVISED CIRCUIT.	CB	6-15-50	CWC

VHF RADIO
RADIOMARINE
ENGINEERING D
NEW YORK, N



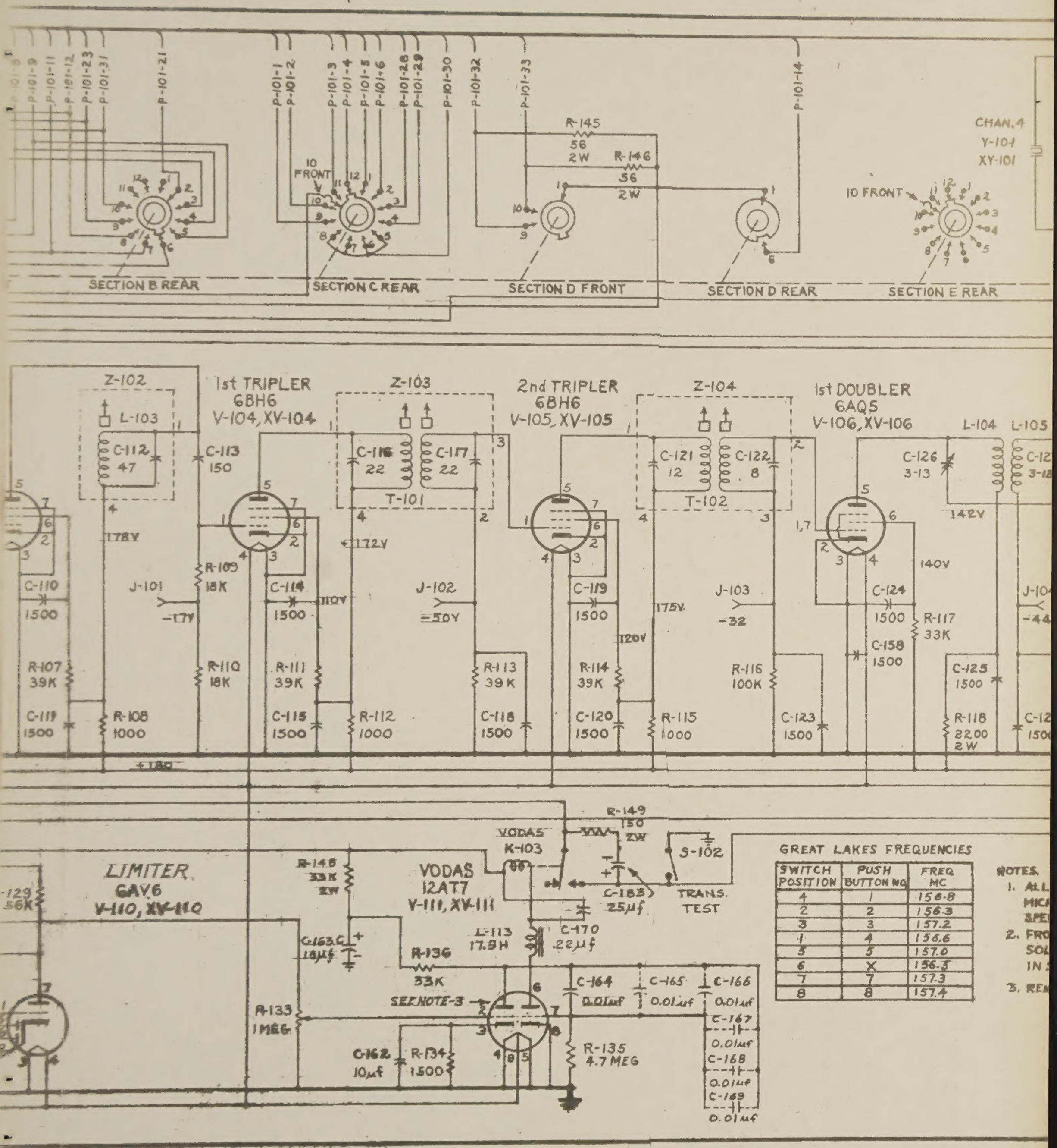
R-354
39K
R-353
39K
1st I.F. AMPLIFIER
6BH6
V-306, XV-306
Z-313
Z-312
Z-311
Z-310
C-345
C-344
C-342
C-341
C-339
C-338
C-337
C-336
51
100
T-308
T-307
T-306
T-30
R-321
1.0 M
0.7V
C-346
0.01µf
80V
0.5V
C-347
100
R-319
220K
C-348
0.01µf
R-318
22K 1W
C-388
0.01µf
R-348
100
R-317
220K
Y-302
XY-302
Y-301
XY-301
C-334
4-30
C-333
4-30
2nd I.F. AMPLIFIER
6BH6
V-307, XV-307
1st LIMITER
6BH6
V-308, XV-308
Z-314
Z-315
20V
C-351
C-352
T-309
T 310
70V
47V
C-350
0.01µf
R-322
47K
1W
R-340
560K
C-353
51
R-323
100K
C-354
0.01µf
R-324
47K
1W
560K
C-340
.033µF
J-304
J-303
C-349
0.01µf
C-343

GREAT LAKES FREQUENCIES

RELAY POSITION	PUSH BUTTON NO.	FREQ MC.
OPERATED	7	162.0
RELEASED	8	161.9

NOTES:

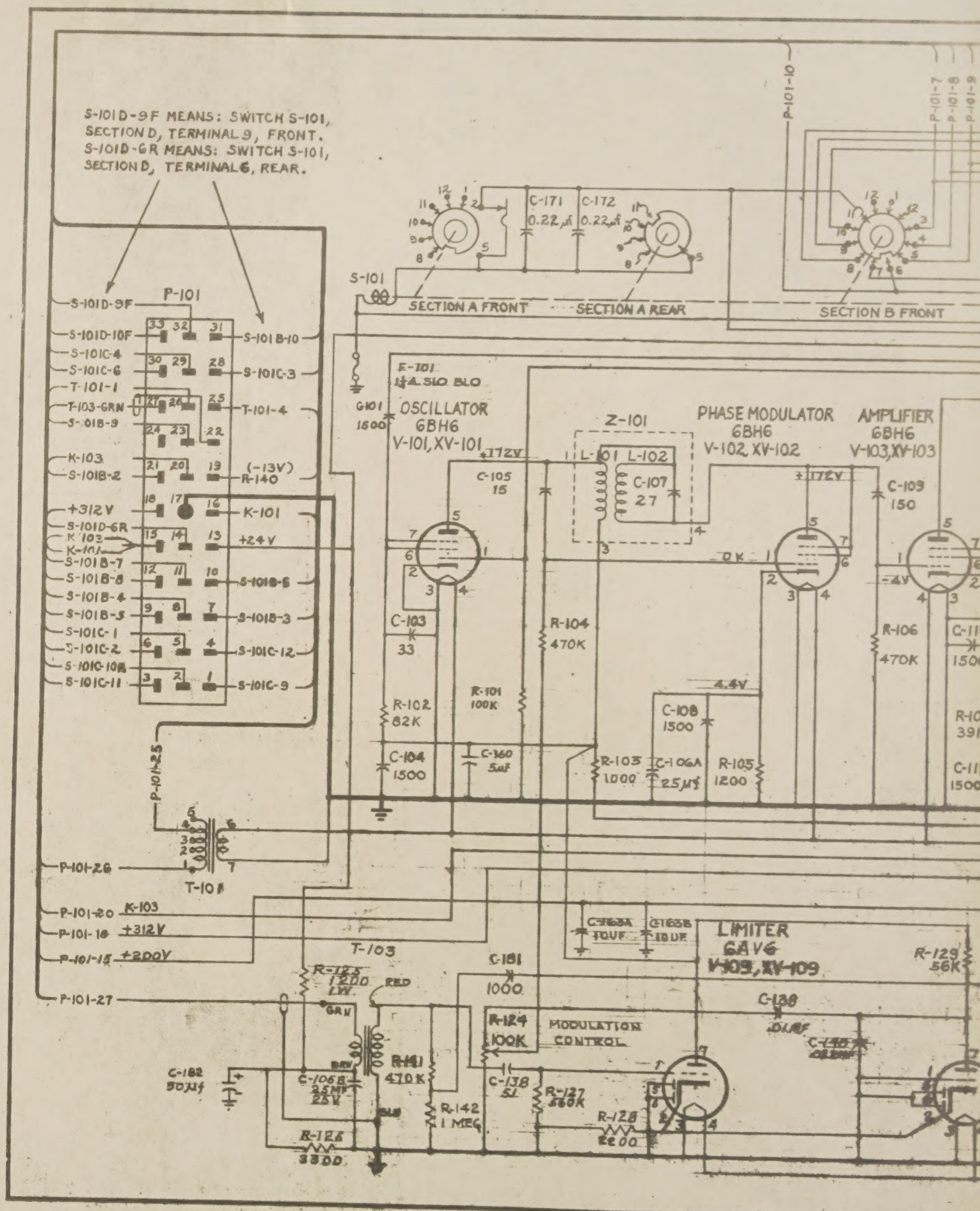
1. IF AUDIO OUTPUT POWER IS LESS THAN 0.75 WATTS MOVE C-315 TO JUNCTION OF R-360 AND R-356


P-101-8
P-101-9
P-101-11
P-101-12
P-101-23
P-101-31
P-101-21
P-101-1
P-101-2
P-101-3
P-101-4
P-101-5
P-101-6
P-101-28
P-101-29
P-101-30
P-101-32
P-101-33
P-101-14
R-145
56
2W
R-146
56
2W
CHAN.4
Y-101
XY-101
10 FRONT
SECTION B REAR
SECTION C REAR
SECTION D FRONT
SECTION D REAR
SECTION E REAR
Z-102
L-103
C-112
47
C-113
150
1st TRIPLER
6BH6
V-104, XV-104
Z-103
C-116
22
C-117
22
T-101
2nd TRIPLER
6BH6
V-105, XV-105
Z-104
C-121
12
C-122
8
T-102
1st DOUBLER
6AQ5
V-106, XV-106
L-104
L-105
C-126
3-13
142V
140V
178V
+172V
J-101
-17V
R-109
18K
C-114
1500
110V
J-102
-50V
C-119
1500
175V
120V
J-103
-32
C-124
1500
R-117
33K
C-158
1500
C-110
1500
R-107
39K
R-110
18K
R-111
39K
R-113
39K
R-114
39K
R-116
100K
C-125
1500
C-111
1500
R-108
1000
C-115
1500
R-112
1000
C-118
1500
C-120
1500
R-115
1000
C-123
1500
R-118
2200
2W
+180
LIMITER
6AV6
V-110, XV-110
R-129
56K
R-148
33K
2W
C-163
18μf
VODAS
12AT7
V-111, XV-111
VODAS
K-103
R-149
150
2W
S-102
C-183
25μf
TRANS.
TEST
L-113
17.5H
C-170
.22μf
R-136
33K
SEE NOTE-3
C-164
0.01μf
C-165
0.01μf
C-166
0.01μf
C-167
0.01μf
C-168
0.01μf
C-169
0.01μf
R-133
1 MEG
C-162
10μf
R-134
1500
R-135
4.7 MEG

GREAT LAKES FREQUENCIES

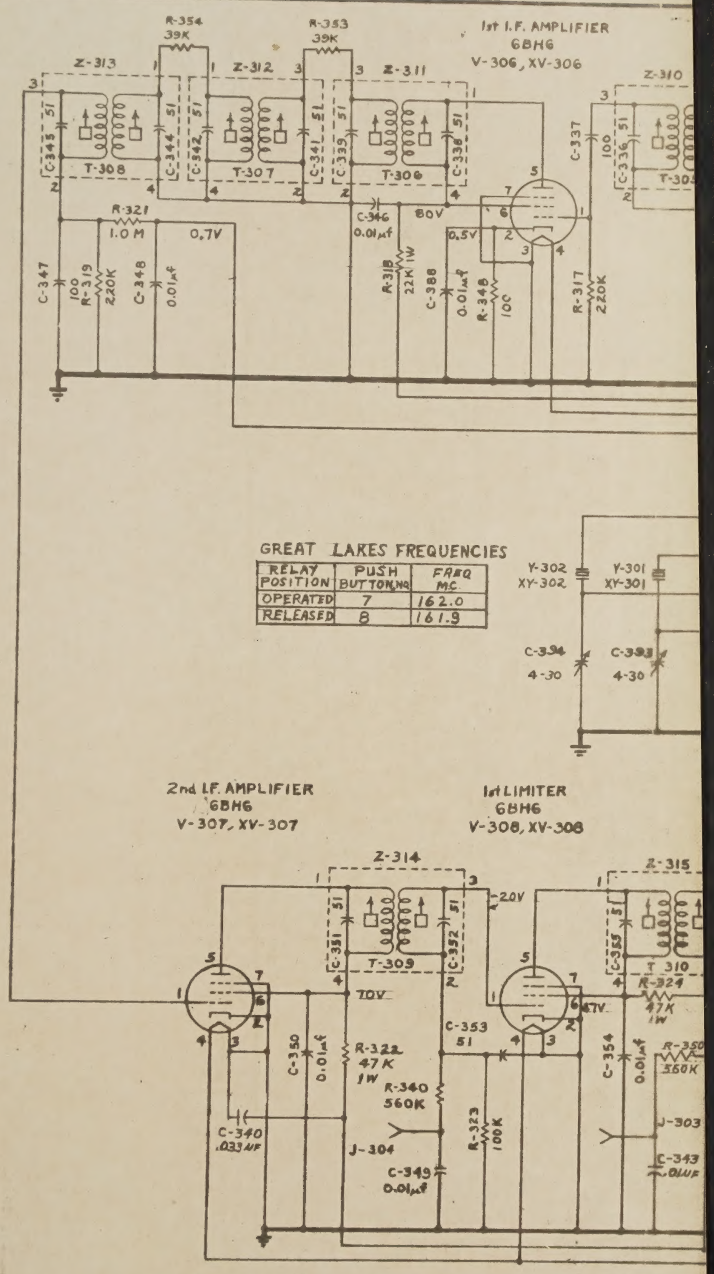
SWITCH POSITION	PUSH BUTTON NO	FREQ MC
4	1	156.8
2	2	156.3
3	3	157.2
1	4	156.6
5	5	157.0
6	X	156.5
7	7	157.3
8	8	157.4

NOTES.
1. ALL
MICA
SPE
2. FRO
SOL
IN
3. REM



S-101D-9F MEANS: SWITCH S-101, SECTION D, TERMINAL 9, FRONT.
S-101D-6R MEANS: SWITCH S-101, SECTION D, TERMINAL 6, REAR.

P-101
S-101D-9F
S-101D-10F
S-101C-4
S-101C-6
T-101-1
T-103-GRN
S-101B-9
K-103
S-101B-2
+312V
S-101D-6R
K 103
K-101
S-101B-7
S-101B-8
S-101B-4
S-101B-5
S-101C-1
S-101C-2
S-101C-10R
S-101C-11
S-101B-10
S-101C-3
T-101-4
(-13V)
R-140
K-101
+24V
S-101B-6
S-101B-3
S-101C-12
S-101C-9
P-101-25
T-101
P-101-26
P-101-20
K-103
P-101-16
+312V
P-101-15
+200V
P-101-27
P-101-10
P-101-7
P-101-8
P-101-9
S-101
SECTION A FRONT
SECTION A REAR
SECTION B FRONT
C-171
0.22μf
C-172
0.22μf
G101
1500
F-101
1/4A SLO BLO
OSCILLATOR
6BH6
V-101, XV-101
+172V
C-105
15
Z-101
L-101
L-102
C-107
27
PHASE MODULATOR
6BH6
V-102, XV-102
AMPLIFIER
6BH6
V-103, XV-103
+172V
C-109
150
0K
-4V
C-103
33
R-104
470K
R-106
470K
R-101
100K
R-102
82K
4.4V
C-108
1500
C-104
1500
C-160
5μf
R-103
1000
C-106A
25μf
R-105
1200
C-163A
10μf
C-163B
10μf
LIMITER
6AV6
V-109, XV-109
R-129
56K
T-103
R-123
1200
1W
RED
GRN
BRN
BLK
C-181
1000
R-124
100K
MODULATION
CONTROL
C-138
.01μf
C-182
50μf
C-106B
25μf
25V
R-141
470K
R-142
1 MEG
C-138
51
R-127
560K
R-128
2200
R-126
3300

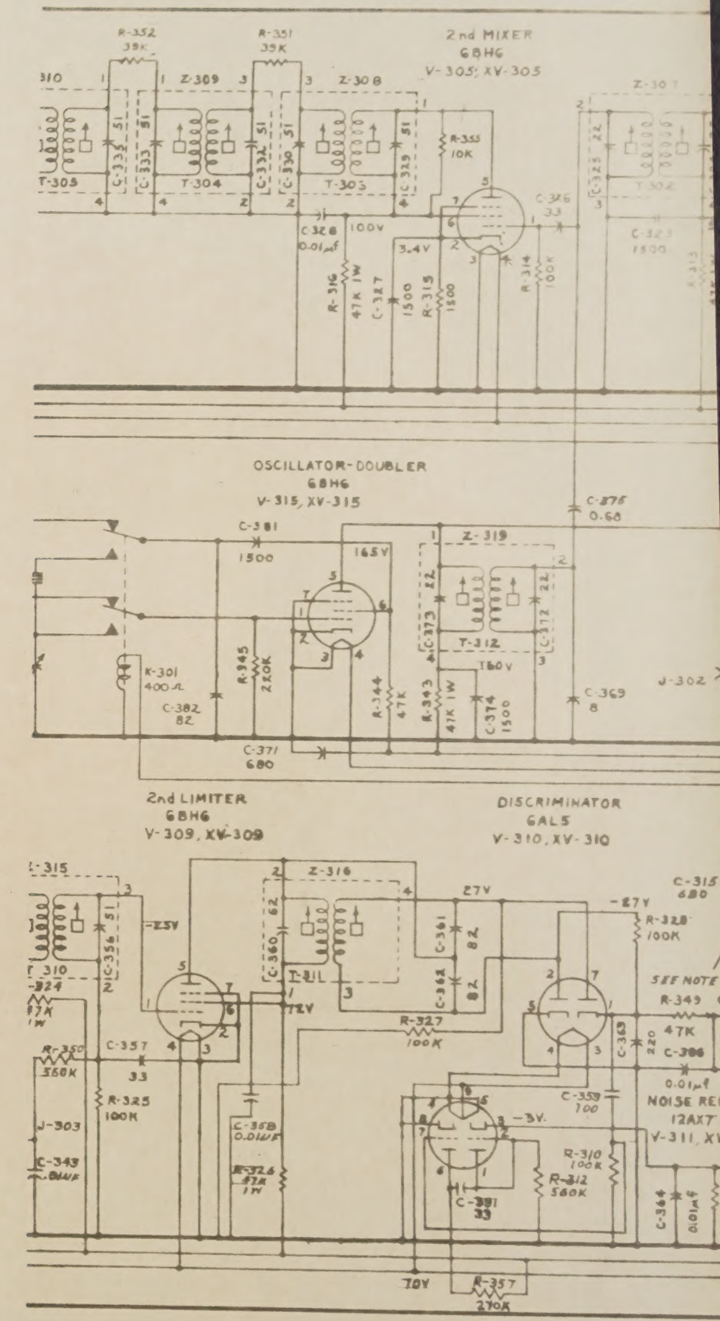

1st I.F. AMPLIFIER
6BH6
V-306, XV-306
Z-313
Z-312
Z-311
Z-310
T-308
T-307
T-306
R-354
39K
R-353
39K
R-321
1.0 M
0.7V
80V
0.5V
C-346
0.01μf
R-318
22K 1W
R-348
100
R-317
220K
R-319
220K
C-347
C-348
C-337
Y-302
XY-302
Y-301
XY-301
C-394
4-30
C-393
4-30
2nd I.F. AMPLIFIER
6BH6
V-307, XV-307
1st LIMITER
6BH6
V-308, XV-308
Z-314
Z-315
T-309
T 310
70V
-20V
C-350
0.01μf
R-322
47K
1W
R-340
560K
J-304
C-349
0.01μf
C-340
.033μF
C-353
51
R-323
100K
C-354
0.01μf
R-324
47K
1W
R-350
560K
J-303
C-343
.01μF

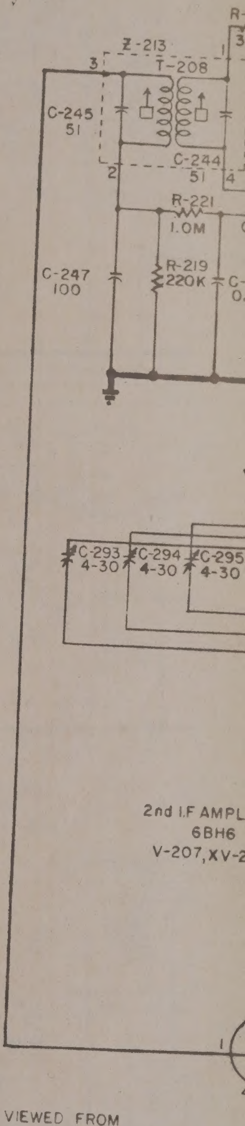
GREAT LAKES FREQUENCIES

RELAY POSITION	PUSH BUTTON No.	FREQ MC.
OPERATED	7	162.0
RELEASED	8	161.9

NOTES:

1. IF AUDIO OUTPUT POWER IS LESS THAN 0.75 WATTS MOVE C-315 TO JUNCTION OF R-360 AND R-356

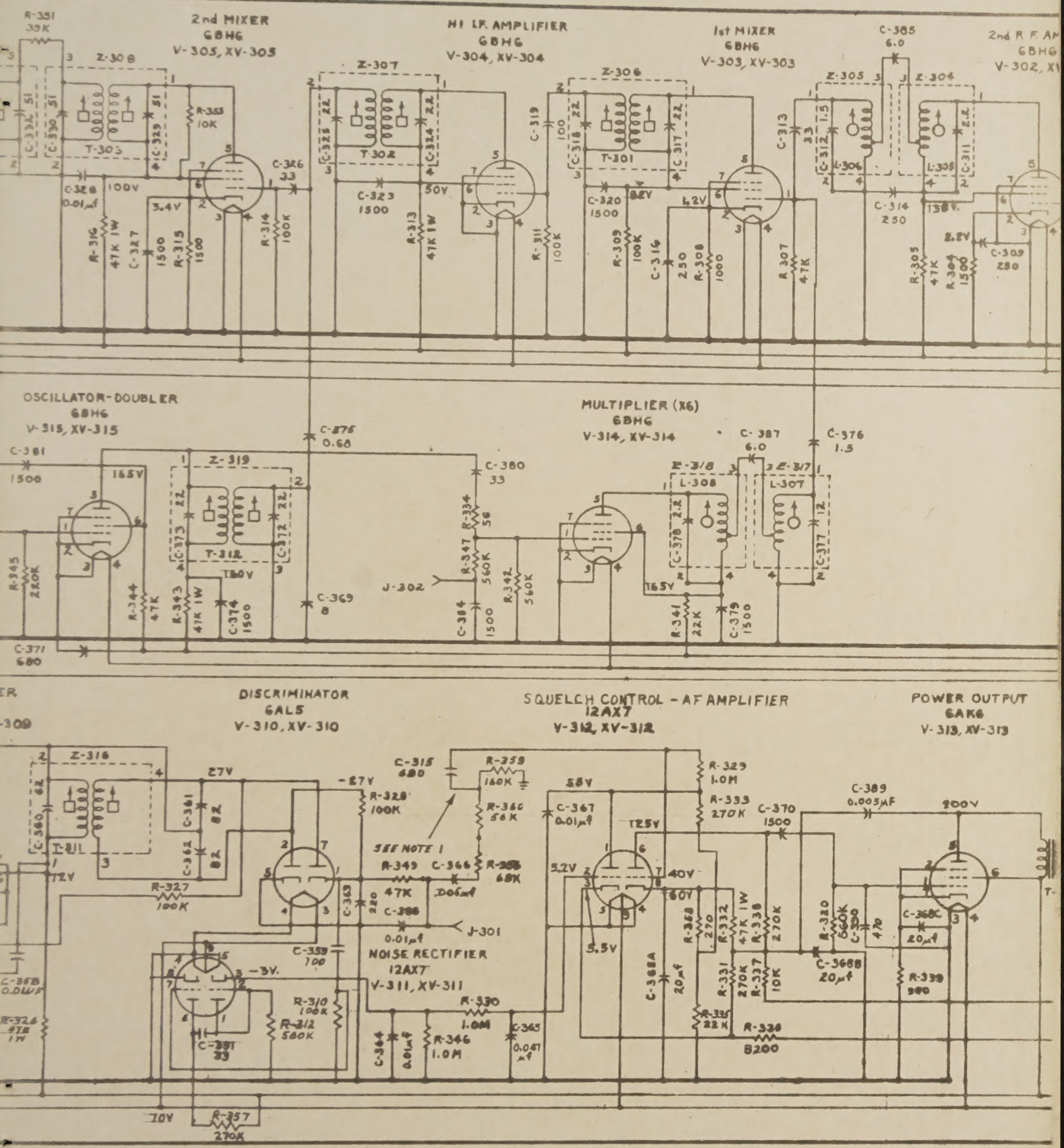

2nd MIXER
6BH6
V-305, XV-305
R-352
39K
R-351
39K
Z-309
Z-308
T-305
T-304
T-303
R-355
10K
C-326
33
C-327
1500
C-328
0.01μf
100V
3.4V
R-316
47K 1W
R-315
1500
R-314
100K
OSCILLATOR-DOUBLER
6BH6
V-315, XV-315
C-381
1500
165V
Z-319
T-312
160V
K-301
400 Ω
C-382
82
R-345
220K
R-344
47K
R-343
47K 1W
C-374
1500
C-371
680
C-375
0.68
C-369
8
J-302
2nd LIMITER
6BH6
V-309, XV-309
DISCRIMINATOR
6AL5
V-310, XV-310
Z-316
27V
-27V
-25V
C-357
33
R-325
100K
R-327
100K
C-358
0.01μF
R-326
47K
1W
C-315
680
R-328
100K
SEE NOTE
R-349
47K
C-386
0.01μf
NOISE RE
12AX7
V-311, X
C-359
100
-3V
R-310
100K
R-312
560K
C-391
33
C-364
0.01μf
70V
R-357
270K
J-303
C-343

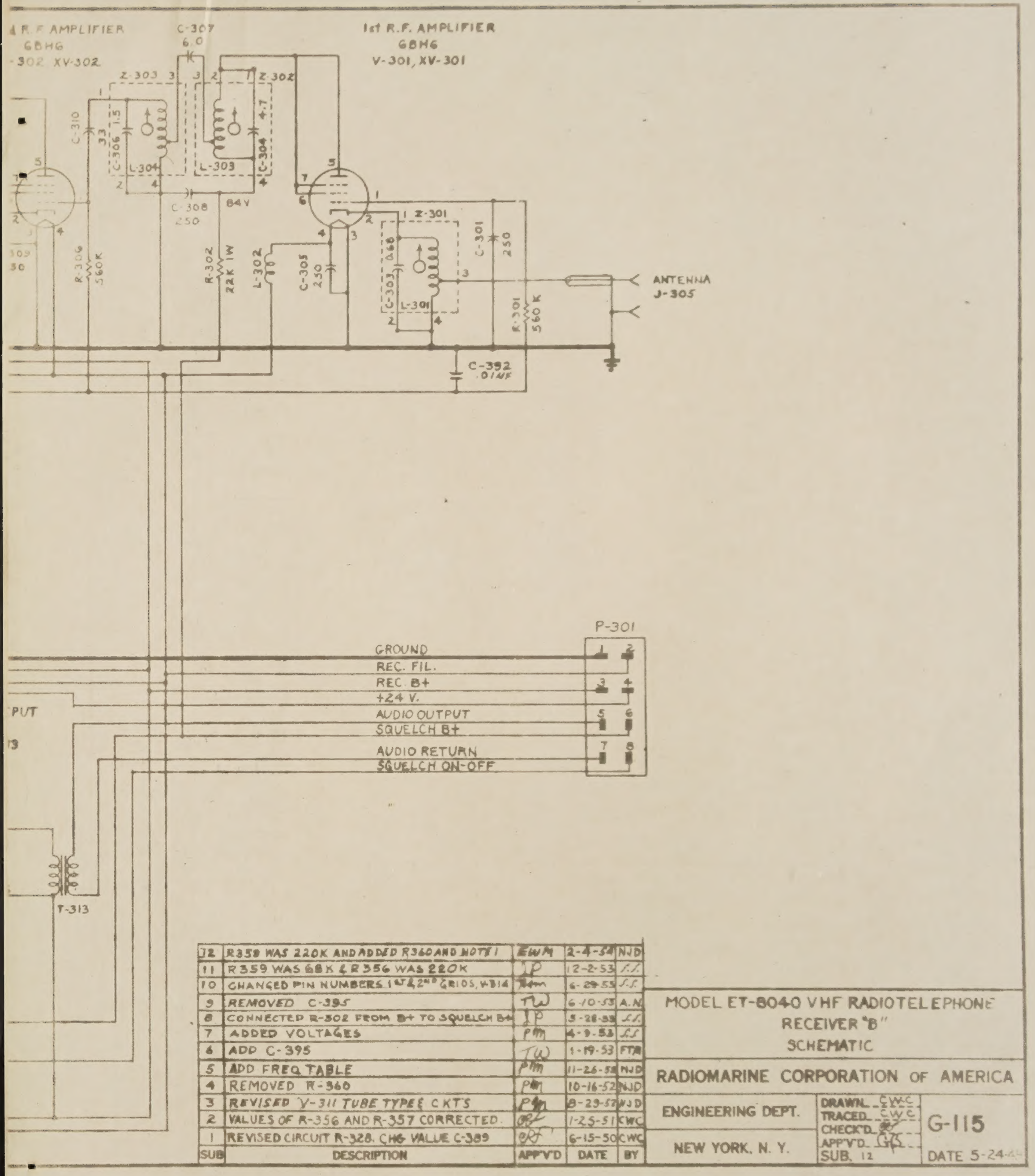

R-
3
Z-213
T-208
3
1
C-245
51
C-244
51
2
4
R-221
1.OM
C-247
100
R-219
220K
C-
0.
C-293
4-30
C-294
4-30
C-295
4-30
2nd I.F AMPL
6BH6
V-207,XV-2
1

SWITCH POSITION	PUSH BUTTON NO	FREQ MC
4	1	156.8
2	2	156.3
3	3	157.2
1	4	156.6
5	5	157.0
6	X	156.5

NOTES

1. FRONT AND REAR WAFER SECTIONS VIEWED FROM SOLENOID END OF SWITCH. WAFERS ARE SHOWN IN STAND BY (POSITION # 4)
2. ALL VALUES EXPRESSED IN MICRO- MICROFARADS AND OHMS UNLESS OTHERWISE SPECIFIED.
3. IF AUDIO OUTPUT POWER IS LESS THAN 0.75 WATTS MOVE C-215 TO JUNCTION OF R-260 AND R-256


2nd MIXER
6BH6
V-305, XV-305
HI I.F. AMPLIFIER
6BH6
V-304, XV-304
1st MIXER
6BH6
V-303, XV-303
2nd R.F. AM
6BH6
V-302, X
Z-308
Z-307
Z-306
Z-305
Z-304
T-303
T-302
T-301
R-351
39K
R-353
10K
C-326
33
C-323
1500
C-385
6.0
100V
50V
84V
4.2V
138V
2.8V
3.4V
OSCILLATOR-DOUBLER
6BH6
V-315, XV-315
MULTIPLIER (X6)
6BH6
V-314, XV-314
Z-319
T-312
165V
180V
C-375
0.68
C-380
33
C-387
6.0
C-376
1.5
L-308
L-307
C-369
8
J-302
C-371
680
DISCRIMINATOR
6AL5
V-310, XV-310
SQUELCH CONTROL - AF AMPLIFIER
12AX7
V-312, XV-312
POWER OUTPUT
6AK6
V-313, XV-313
Z-316
27V
-27V
R-328
100K
SEE NOTE 1
R-349
47K
C-366
.005µf
R-359
160K
R-360
56K
C-315
680
C-367
0.01µf
58V
125V
40V
60V
5.2V
5.5V
R-329
1.0M
R-333
270K
C-370
1500
C-389
0.005µF
200V
C-386
0.01µf
J-301
NOISE RECTIFIER
12AX7
V-311, XV-311
R-330
1.0M
R-346
1.0M
C-365
0.047µf
-3V.
R-310
100K
R-312
560K
C-391
33
R-327
100K
12V
70V
R-357
270K
R-336
8200
R-339
390


R.F. AMPLIFIER
6BH6
302, XV-302
C-307
6.0
1st R.F. AMPLIFIER
6BH6
V-301, XV-301
Z-303
Z-302
Z-301
L-304
L-303
L-302
L-301
C-308
250
84V
R-302
22K 1W
R-306
560K
R-301
560K
ANTENNA
J-305
C-392
.01µF
P-301
GROUND
REC. FIL.
REC. B+
+24 V.
AUDIO OUTPUT
SQUELCH B+
AUDIO RETURN
SQUELCH ON-OFF
T-313

12	R359 WAS 220K AND ADDED R360 AND NOTE 1	EWM	2-4-54	NJD
11	R359 WAS 68K & R356 WAS 220K	JP	12-2-53	S.S.
10	CHANGED PIN NUMBERS 1ST & 2ND GRIDS, V-314	Pm	6-29-53	S.S.
9	REMOVED C-395	TW	6-10-53	A.N.
8	CONNECTED R-302 FROM B+ TO SQUELCH B+	JP	5-28-53	S.S.
7	ADDED VOLTAGES	Pm	4-9-53	S.S.
6	ADD C-395	TW	1-19-53	FTR
5	ADD FREQ TABLE	Pm	11-26-52	NJD
4	REMOVED R-360	Pm	10-16-52	NJD
3	REVISED V-311 TUBE TYPE & CKTS	Pm	8-29-52	NJD
2	VALUES OF R-356 AND R-357 CORRECTED.	CRF	1-25-51	CWC
1	REVISED CIRCUIT R-328. CHG VALUE C-389	CRF	6-15-50	CWC
SUB	DESCRIPTION	APP'V'D	DATE	BY

MODEL ET-8040 VHF RADIOTELEPHONE
RECEIVER "B"
SCHEMATIC

RADIOMARINE CORPORATION OF AMERICA

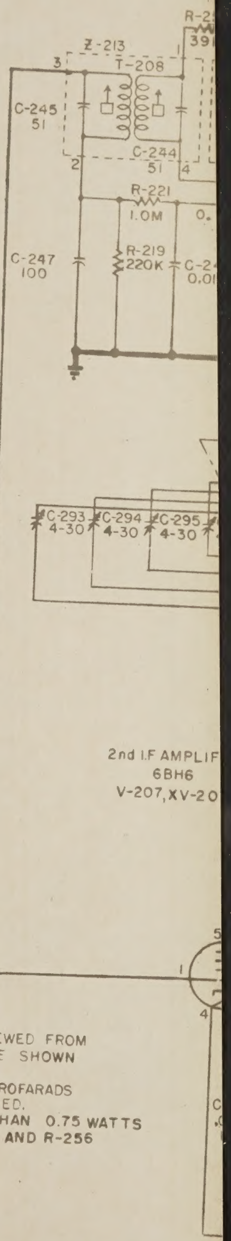
ENGINEERING DEPT.

NEW YORK, N. Y.

DRAWN CWC
TRACED CWC
CHECK'D
APP'V'D GS
SUB. 12

G-115

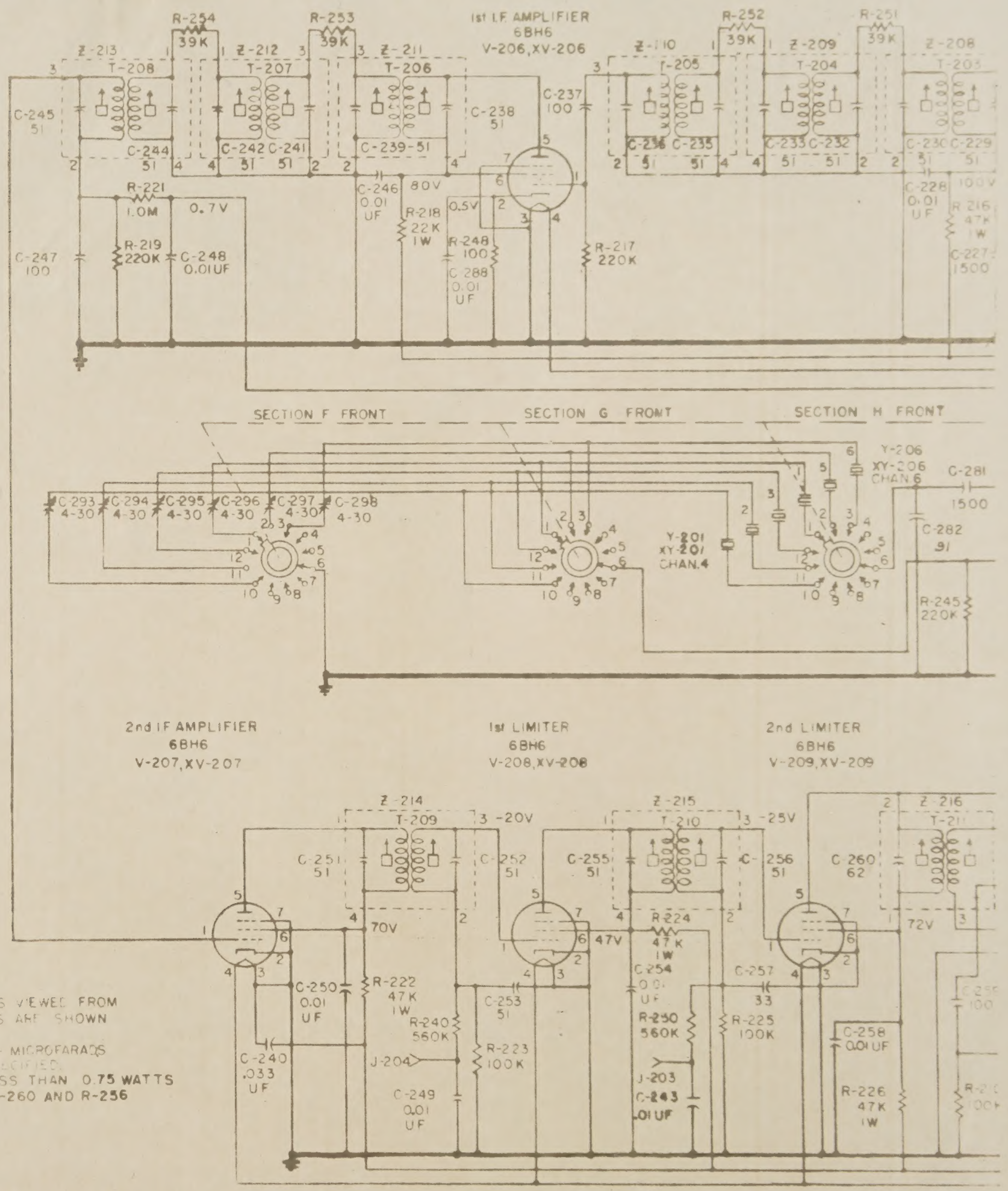
DATE 5-24-4


Z-213
T-208
R-2
39
C-245
51
C-244
51
R-221
1.0M
C-247
100
R-219
220K
C-2
0.0
C-293
4-30
C-294
4-30
C-295
4-30
2nd I.F AMPLIF
6BH6
V-207,XV-20

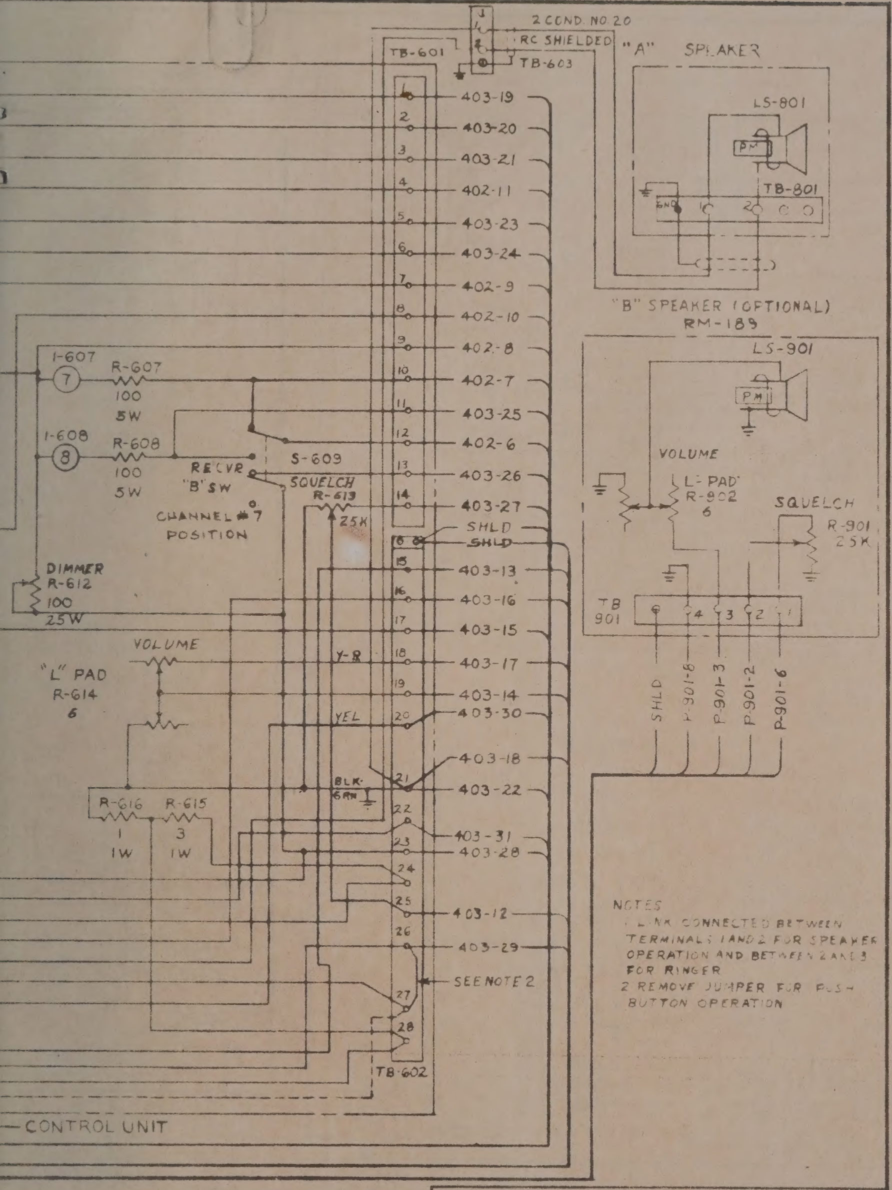
SWITCH POSITION	PUSH BUTTON NO	FREQ MC
4	1	156.8
2	2	156.3
3	3	157.2
1	4	156.6
5	5	157.0
6	X	156.5

NOTES:

1. FRONT AND REAR WAFER SECTIONS VIEWED FROM SOLENOID END OF SWITCH. WAFERS ARE SHOWN IN STAND BY (POSITION # 4)
2. ALL VALUES EXPRESSED IN MICRO-MICROFARADS AND OHMS UNLESS OTHERWISE SPECIFIED.
3. IF AUDIO OUTPUT POWER IS LESS THAN 0.75 WATTS MOVE C-215 TO JUNCTION OF R-260 AND R-256


R-254
39K
R-253
39K
1st I.F. AMPLIFIER
6BH6
V-206,XV-206
R-252
39K
R-251
39K
Z-213
T-208
Z-212
T-207
Z-211
T-206
Z-210
T-205
Z-209
T-204
Z-208
T-203
C-245
51
C-244
51
C-242
51
C-241
51
C-239-51
C-238
51
C-237
100
C-236
51
C-235
51
C-233
51
C-232
51
C-230
C-229
51
R-221
1.0M
0.7V
C-246
0.01
UF
80V
R-218
22K
1W
0.5V
R-248
100
C-288
0.01
UF
R-217
220K
C-228
0.01
UF
100V
R-216
47K
1W
C-227
1500
C-247
100
R-219
220K
C-248
0.01UF
SECTION F FRONT
SECTION G FRONT
SECTION H FRONT
C-293
4-30
C-294
4-30
C-295
4-30
C-296
4-30
C-297
4-30
C-298
4-30
Y-201
XY-201
CHAN.4
Y-206
XY-206
CHAN 6
C-281
1500
C-282
91
R-245
220K
2nd I.F AMPLIFIER
6BH6
V-207,XV-207
1st LIMITER
6BH6
V-208,XV-208
2nd LIMITER
6BH6
V-209,XV-209
Z-214
T-209
-20V
Z-215
T-210
-25V
Z-216
T-211
C-251
51
C-252
51
C-255
51
C-256
51
C-260
62
70V
47V
72V
C-250
0.01
UF
R-222
47K
1W
R-240
560K
C-253
51
R-223
100K
R-224
47K
1W
C-254
0.01
UF
C-257
33
R-250
560K
R-225
100K
C-258
0.01UF
C-240
.033
UF
J-204
C-249
0.01
UF
J-203
C-243
.01UF
R-226
47K
1W

R SECTIONS VIEWED FROM
H. WAFERS ARE SHOWN
N #4)
N MICRO- MICROFARADS
WISE SPECIFIED.
WER IS LESS THAN 0.75 WATTS
TION OF R-260 AND R-256


2 COND. NO.20
RC SHIELDED
TB-601
TB-603
"A" SPEAKER
LS-801
PM
TB-801
GND
"B" SPEAKER (OPTIONAL)
RM-189
LS-901
PM
VOLUME
L-PAD
R-902
6
SQUELCH
R-901
25K
TB
901
SHLD
P-901-8
P-901-3
P-901-2
P-901-6
403-19
403-20
403-21
402-11
403-23
403-24
402-9
402-10
402-8
402-7
403-25
402-6
403-26
403-27
SHLD
SHLD
403-13
403-16
403-15
403-17
403-14
403-30
403-18
403-22
403-31
403-28
403-12
403-29
SEE NOTE 2
I-607
R-607
100
5W
I-608
R-608
100
5W
RECVR
"B" SW
S-609
SQUELCH
R-613
25K
CHANNEL #7
POSITION
DIMMER
R-612
100
25W
VOLUME
"L" PAD
R-614
6
Y-R
YEL
BLK-GRN
R-616
1
1W
R-615
3
1W
TB-602
CONTROL UNIT

NOTES
1 LINK CONNECTED BETWEEN TERMINALS 1 AND 2 FOR SPEAKER OPERATION AND BETWEEN 2 AND 3 FOR RINGER
2 REMOVE JUMPER FOR PUSH-BUTTON OPERATION

DESCRIPTION	APP'V'D	DATE	BY
T VOLUME CONTROL		12-2-53	NJD
D DWG FOR 115V DC OPER. ONLY		9-14-53	AN
K-701 & R-501 RATINGS		6-19-53	S.S.
OLTAGES & NOTATION	Pm	4-9-53	SS
AS 2 TERM, REVISED CONN.	Pm	11-28-52	NJD
D CIRCUIT'S	Pm	10-16-52	NJD
MENCLATURE	Pm	9-2-52	NJD
OR PUSH BUTTON KEYING		7-21-52	S.S.
CIRCUIT ON K-401 TERMINAL 3, R-50		6-15-50	CWC

MODEL ET-8040
POWER SUPPLY, REMOTE CONTROL
AND INTERCONNECTIONS

RADIOMARINE CORPORATION OF AMERICA

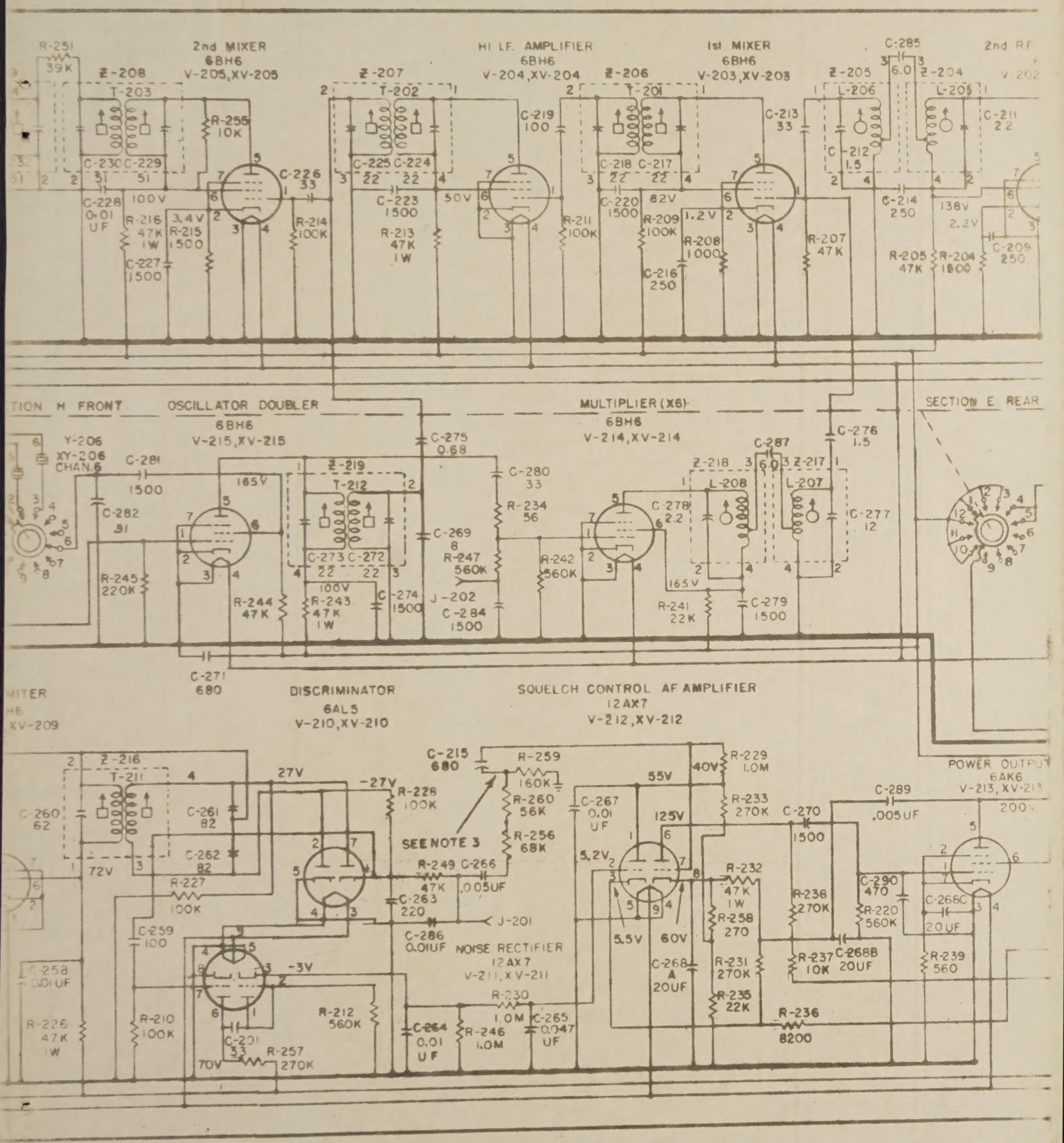
ENGINEERING DEPT.

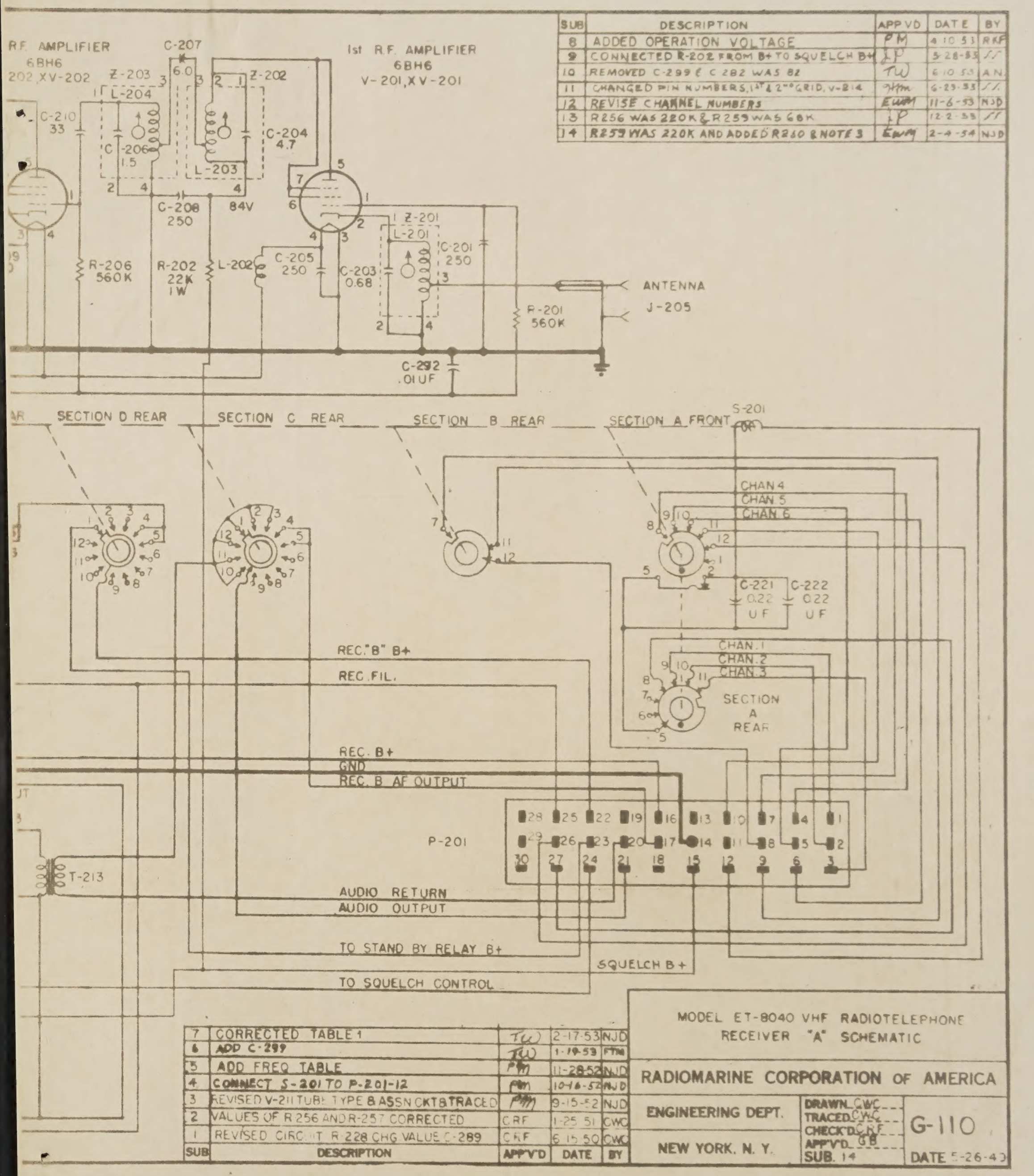
NEW YORK, N. Y.

DRAWN
TRACED
CHECK'D
APP'V'D
SUB. 9

G-119

DATE 12-15-49


2nd MIXER
6BH6
V-205, XV-205
HI I.F. AMPLIFIER
6BH6
V-204, XV-204
1st MIXER
6BH6
V-203, XV-203
OSCILLATOR DOUBLER
6BH6
V-215, XV-215
MULTIPLIER (X6)
6BH6
V-214, XV-214
SECTION E REAR
DISCRIMINATOR
6AL5
V-210, XV-210
SQUELCH CONTROL AF AMPLIFIER
12AX7
V-212, XV-212
NOISE RECTIFIER
12AX7
V-211, XV-211
POWER OUTPUT
6AK6
V-213, XV-213
SEE NOTE 3
J-201
J-202


R.F. AMPLIFIER
6BH6
XV-202
1st R.F. AMPLIFIER
6BH6
V-201, XV-201
ANTENNA
J-205
SECTION D REAR
SECTION C REAR
SECTION B REAR
SECTION A FRONT
S-201
CHAN 4
CHAN 5
CHAN 6
CHAN 1
CHAN 2
CHAN 3
SECTION A REAR
REC."B" B+
REC. FIL.
REC. B+
GND
REC. B AF OUTPUT
P-201
T-213
AUDIO RETURN
AUDIO OUTPUT
TO STAND BY RELAY B+
SQUELCH B+
TO SQUELCH CONTROL

SUB	DESCRIPTION	APP VD	DATE	BY
8	ADDED OPERATION VOLTAGE	PM	4-10-53	RKF
9	CONNECTED R-202 FROM B+ TO SQUELCH B+	JP	5-28-53	SS
10	REMOVED C-299 & C 282 WAS 82	TW	6-10-53	AN.
11	CHANGED PIN NUMBERS, 1ST & 2ND GRID, V-214	Jfm	6-23-53	SS
12	REVISE CHANNEL NUMBERS	EWM	11-6-53	NJD
13	R256 WAS 220K & R259 WAS 68K	JP	12-2-53	SS
14	R259 WAS 220K AND ADDED R260 & NOTE 3	EWM	2-4-54	NJD

SUB	DESCRIPTION	APP'V'D	DATE	BY
7	CORRECTED TABLE 1	TW	2-17-53	NJD
6	ADD C-299	TW	1-19-53	FTM
5	ADD FREQ TABLE	PM	11-28-52	NJD
4	CONNECT S-201 TO P-201-12	PM	10-16-52	NJD
3	REVISED V-211 TUBE TYPE & ASSN CKT & TRACED	PM	9-15-52	NJD
2	VALUES OF R 256 AND R-257 CORRECTED	CRF	1-25-51	CWC
1	REVISED CIRCUIT R-228 CHG VALUE C-289	CRF	6-15-50	CWC

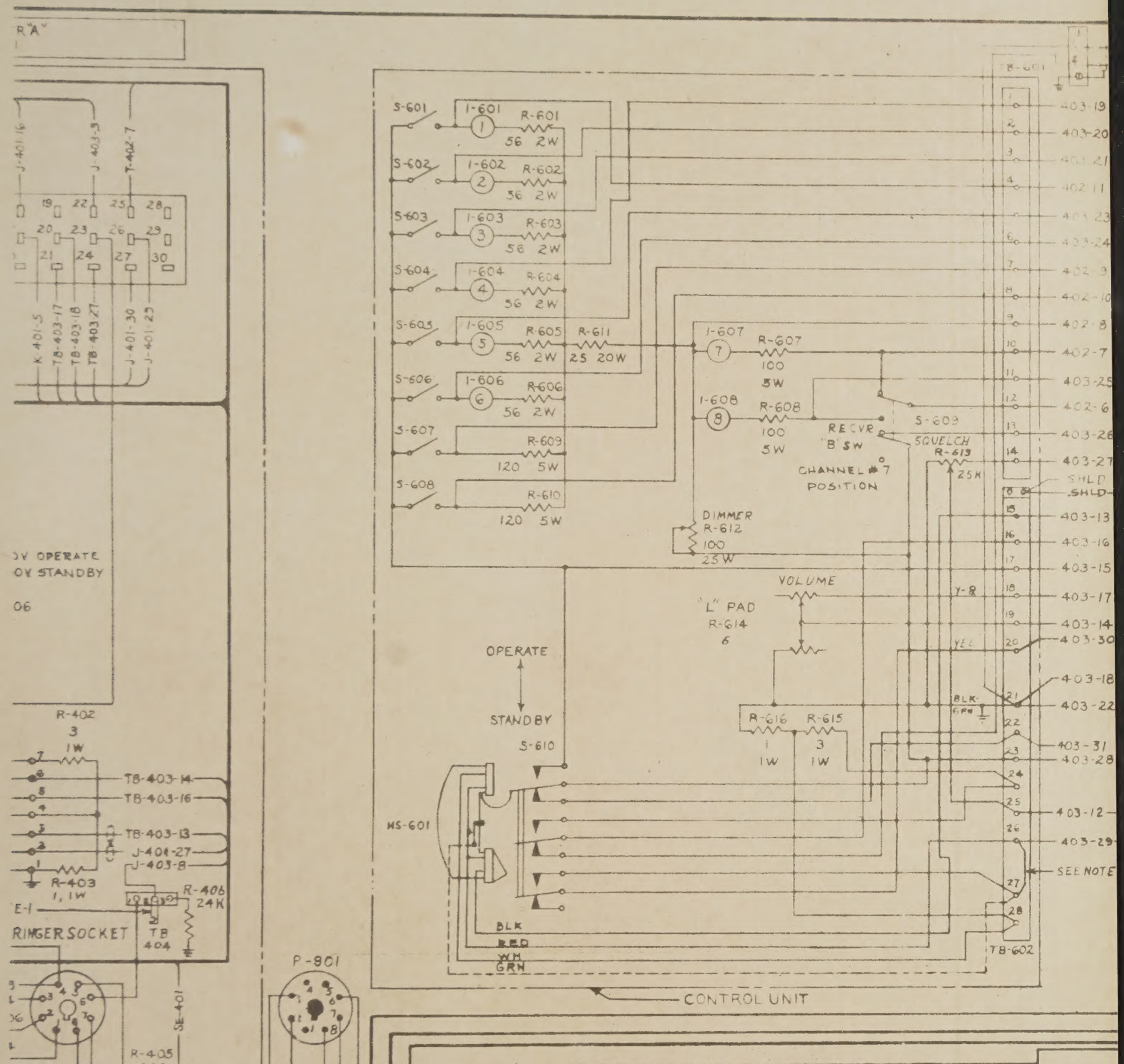
MODEL ET-8040 VHF RADIOTELEPHONE
RECEIVER "A" SCHEMATIC

RADIOMARINE CORPORATION OF AMERICA

ENGINEERING DEPT.
NEW YORK, N. Y.

DRAWN CWC
TRACED CWC
CHECK'D CRF
APP'V'D GB
SUB. 14

G-110
DATE 5-26-40


CONTROL UNIT
S-601
I-601
R-601 56 2W
S-602
I-602
R-602 56 2W
S-603
I-603
R-603 56 2W
S-604
I-604
R-604 56 2W
S-605
I-605
R-605 56 2W
R-611 25 20W
S-606
I-606
R-606 56 2W
S-607
R-609 120 5W
S-608
R-610 120 5W
I-607
R-607 100 5W
I-608
R-608 100 5W
RECVR 'B' SW
S-609
SQUELCH R-613 25K
CHANNEL #7 POSITION
DIMMER R-612 100 25W
VOLUME
"L" PAD R-614 6
OPERATE
STANDBY
S-610
R-616 1 1W
R-615 3 1W
HS-601
BLK
RED
WH
GRN
TB-602
SEE NOTE
SHLD
Y-R
YEL
BLK
403-19
403-20
403-21
402-11
403-23
403-24
402-9
402-10
402-8
402-7
403-25
402-6
403-26
403-27
403-13
403-16
403-15
403-17
403-14
403-30
403-18
403-22
403-31
403-28
403-12
403-29
R-402 3 1W
TB-403-14
TB-403-16
TB-403-13
J-401-27
J-403-8
R-403 1, 1W
R-406 24K
TB 404
SE-401
RINGER SOCKET
R-405 25 20W
P-801
OV OPERATE
OV STANDBY
K-401-5
TB-403-17
TB-403-18
TB-403-27
J-401-30
J-401-23
J-401-16
J-403-3
T-402-7
TB-901-3
TR-901-2
TB-901-4
SHLD
TB-901-1
7COND.R.C.SHIELDED
D. R.C. SHIELDED (SPECIAL)
D. R.C. SHIELDED

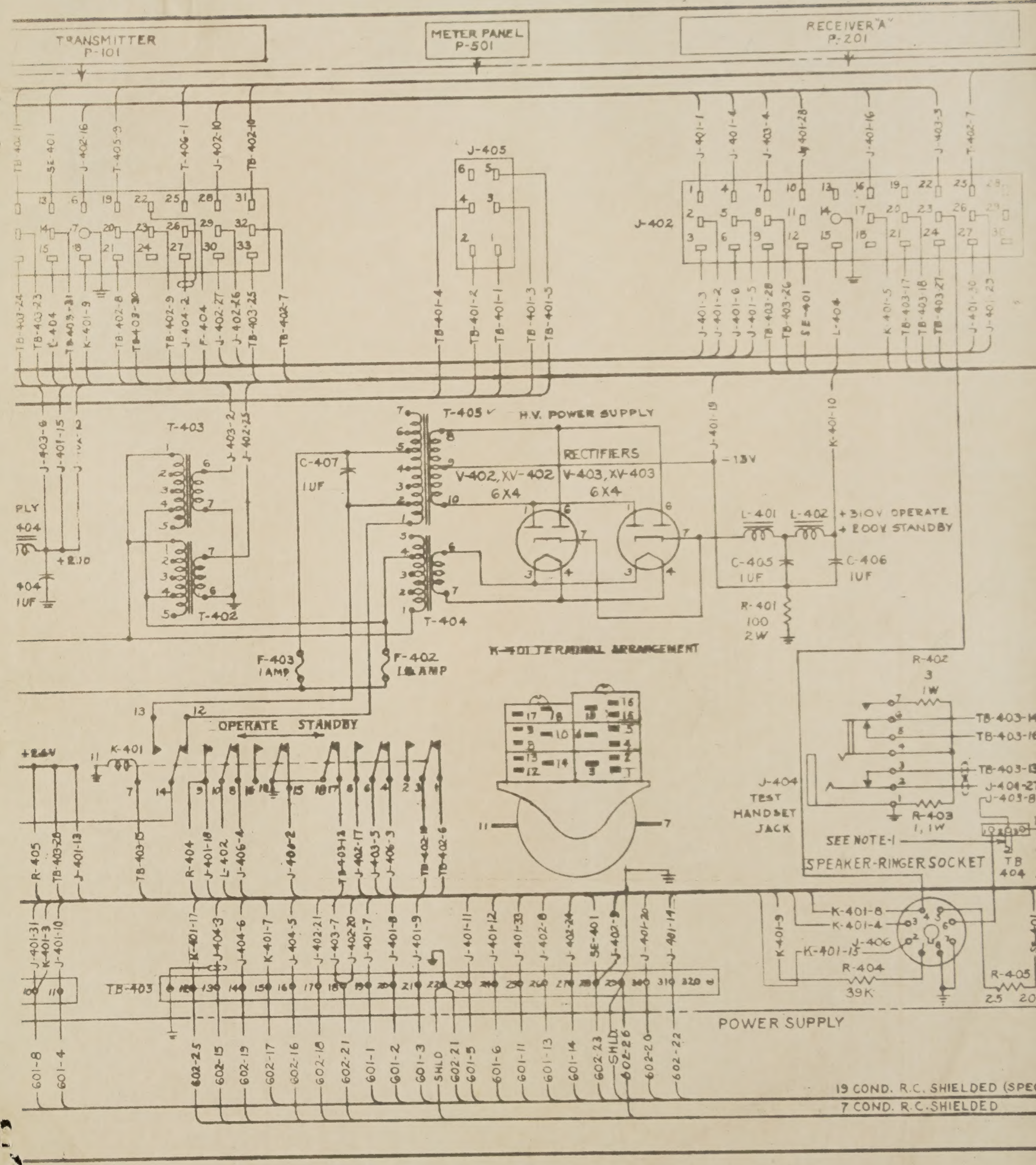
SUB	DESCRIPTION	APP'V'D	DATE	BY
9	CORRECT VOLUME CONTROL		12-2-53	NJD
8	REVISED DWG FOR 115V DC OPER. ONLY		9-14-53	AN
7	ADDED K-701 & R-501 RATINGS		6-19-53	S.S.
6	ADDED VOLTAGES & NOTATION	P.M.	4-9-53	SS
5	TB-801 WAS 2 TERM, REVISED CONN.	P.M.	11-28-52	NJD
4	REVISED CIRCUIT'S	P.M.	10-16-52	NJD
3	ADDED NOMENCLATURE	P.M.	9-2-52	NJD
2	CHANGES FOR PUSH BUTTON KEYING		7-31-52	S.S.
1	REVISED CIRCUIT ON K-401 TERMINAL 3.R-501		6-15-50	CWC

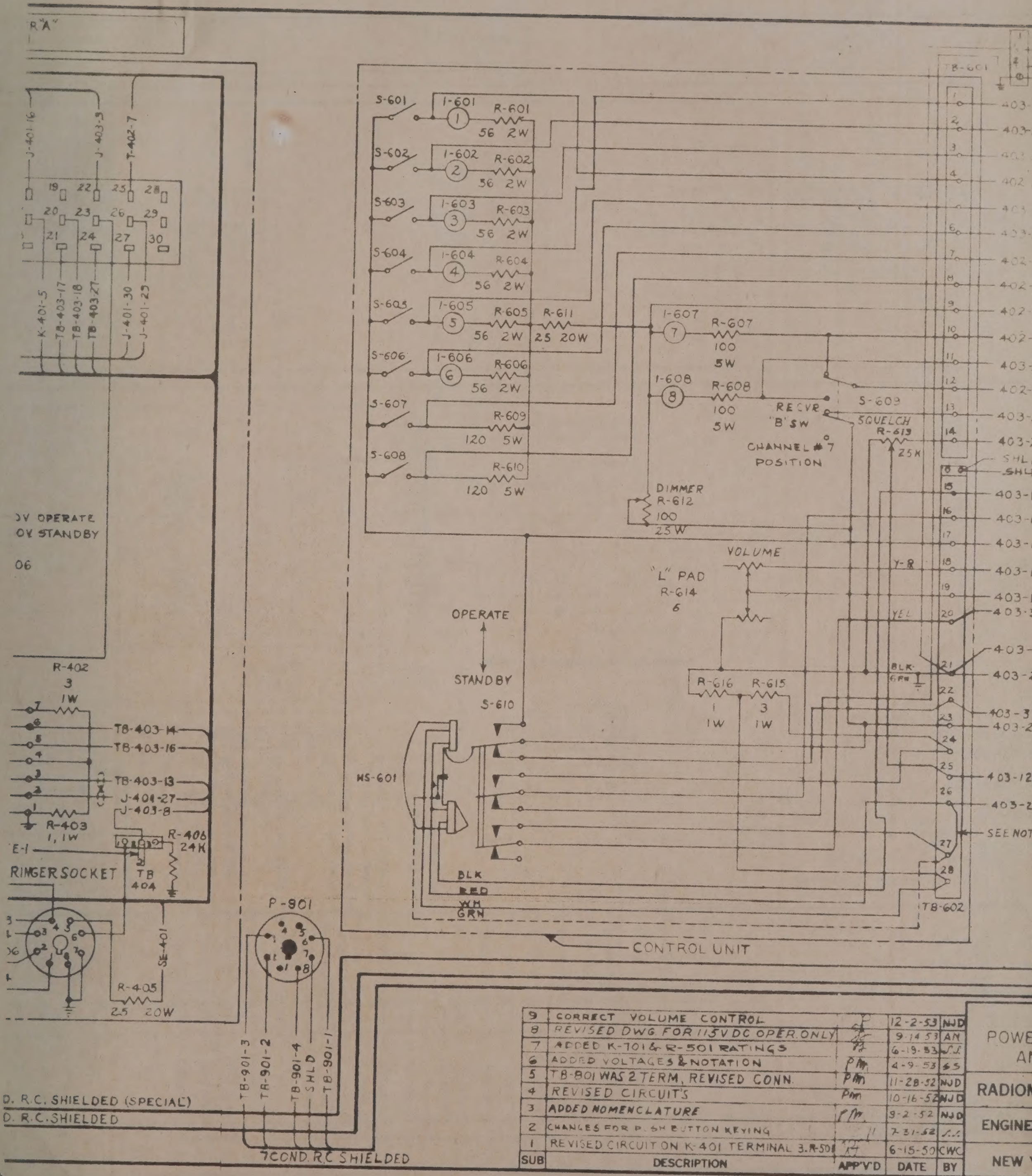
POWER
AN

RADIOMA

ENGINEE

NEW Y


TRANSMITTER P-101
METER PANEL P-501
RECEIVER "A" P-201
J-405
J-402
T-403
T-402
T-405
H.V. POWER SUPPLY
T-404
C-407 1UF
RECTIFIERS
V-402, XV-402 6X4
V-403, XV-403 6X4
-13V
+310V OPERATE
+200V STANDBY
L-401
L-402
C-405 1UF
C-406 1UF
R-401 100 2W
+2.10
404 1UF
F-403 1 AMP
F-402 1 AMP
K-401 TERMINAL ARRANGEMENT
OPERATE
STANDBY
+24V
K-401
J-404 TEST HANDSET JACK
SEE NOTE-1
SPEAKER-RINGER SOCKET
R-402 3 1W
R-403 1, 1W
TB 404
R-404 39K
R-405 25 20W
K-401-8
K-401-4
K-401-13
J-406
TB-403
POWER SUPPLY
19 COND. R.C. SHIELDED (SPEC
7 COND. R.C. SHIELDED


R"A"
J-401-16
J-401-3
T-402-7
19
22
25
28
20
23
26
29
21
24
27
30
K-401-5
TB-403-17
TB-403-18
TB-403-27
J-401-30
J-401-29
OV OPERATE
OV STANDBY
06
R-402
3
1W
TB-403-14
TB-403-16
TB-403-13
J-401-27
J-403-8
R-403
1, 1W
R-406
24K
E-1
RINGER SOCKET
TB
404
R-405
25 20W
SE-401
P-901
TB-901-3
TB-901-2
TB-901-4
SHLD
TB-901-1
D. R.C. SHIELDED (SPECIAL)
D. R.C. SHIELDED
7COND. R.C SHIELDED
S-601
I-601
R-601
56 2W
S-602
I-602
R-602
56 2W
S-603
I-603
R-603
56 2W
S-604
I-604
R-604
56 2W
S-605
I-605
R-605
56 2W
R-611
25 20W
S-606
I-606
R-606
56 2W
S-607
R-609
120 5W
S-608
R-610
120 5W
I-607
R-607
100
5W
I-608
R-608
100
5W
RECVR
'B' SW
S-609
SQUELCH
R-613
25K
CHANNEL # 7
POSITION
DIMMER
R-612
100
25W
VOLUME
"L" PAD
R-614
6
OPERATE
STANDBY
S-610
HS-601
R-616
1
1W
R-615
3
1W
BLK
RED
WH
GRN
BLK
GRN
Y-R
YEL
TB-601
TB-602
SHL
SEE NOT
CONTROL UNIT
403-
402
403-12
403-2
403-3

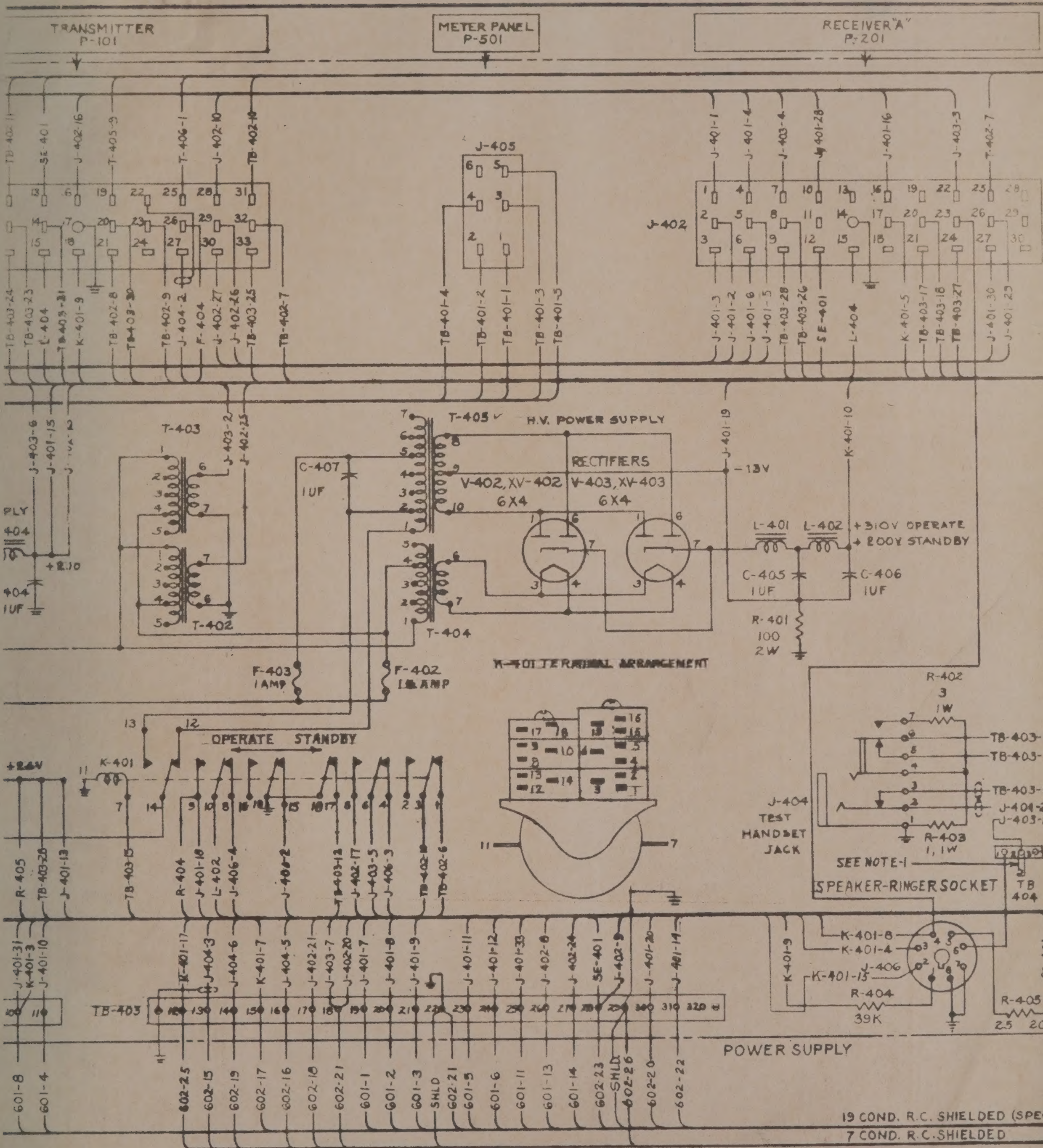
9	CORRECT VOLUME CONTROL		12-2-53	NJD
8	REVISED DWG FOR 115V DC OPER. ONLY		9-14-53	AN
7	ADDED K-701 & R-501 RATINGS		6-19-53	S.S.
6	ADDED VOLTAGES & NOTATION	P.M.	4-9-53	SS
5	TB-801 WAS 2 TERM, REVISED CONN.	P.M.	11-28-52	NJD
4	REVISED CIRCUIT'S	Pm	10-16-52	NJD
3	ADDED NOMENCLATURE	P.M.	9-2-52	NJD
2	CHANGES FOR PUSH BUTTON KEYING		7-31-52	S.S.
1	REVISED CIRCUIT ON K-401 TERMINAL 3. R-501		6-15-50	CWC
SUB	DESCRIPTION	APP'V'D	DATE	BY

POWE
AN

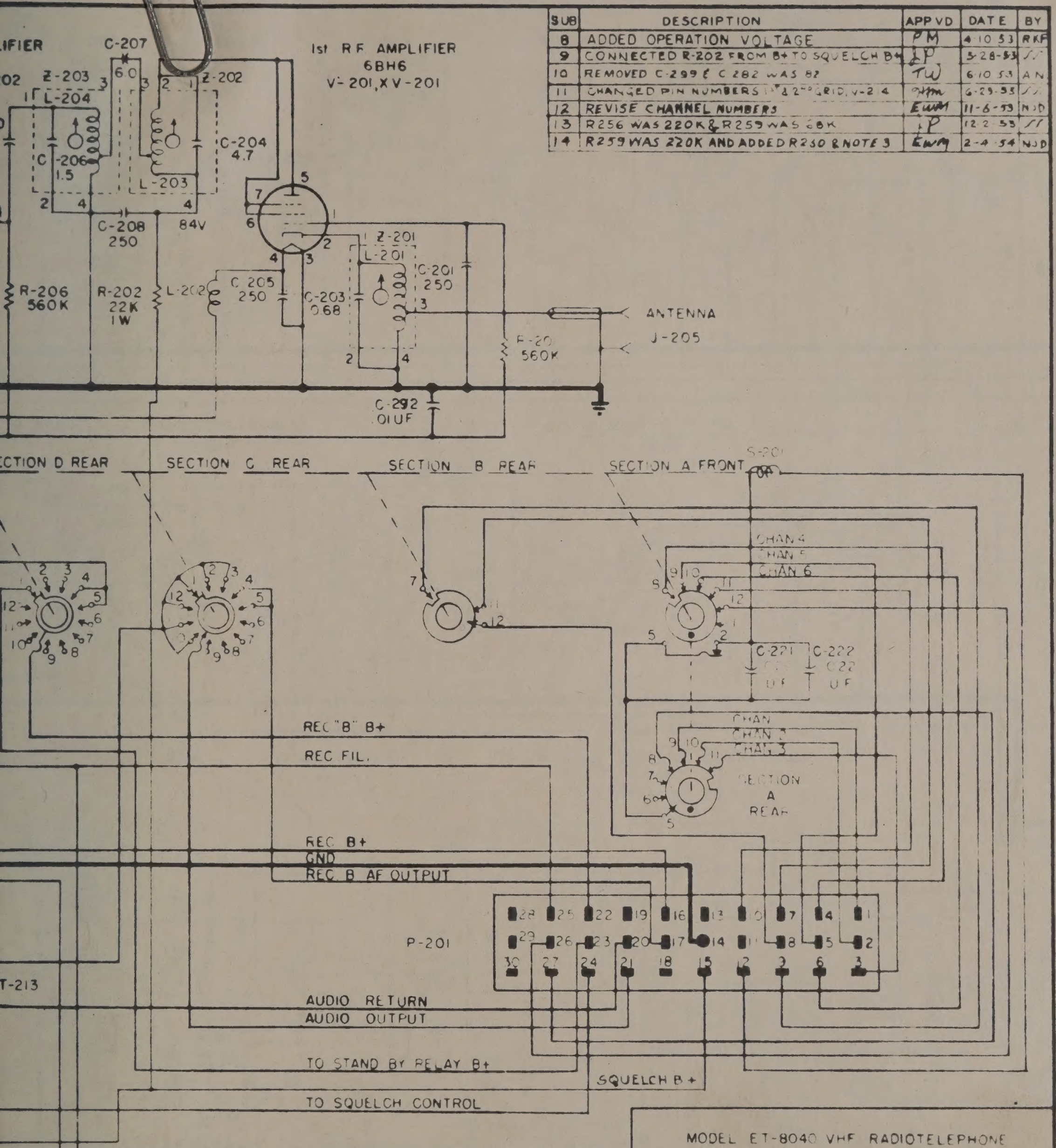
RADION

ENGINE

NEW


TRANSMITTER P-101
METER PANEL P-501
RECEIVER "A" P-201
J-405
J-402
T-403
T-402
T-405
H.V. POWER SUPPLY
RECTIFIERS
V-402, XV-402 6X4
V-403, XV-403 6X4
-13V
C-407 1UF
T-404
L-401
L-402
+310V OPERATE
+200V STANDBY
C-405 1UF
C-406 1UF
R-401 100 2W
F-403 1 AMP
F-402 1.5 AMP
K-401 TERMINAL ARRANGEMENT
OPERATE STANDBY
+24V
K-401
R-402 3 1W
J-404 TEST HANDSET JACK
R-403 1, 1W
SEE NOTE-1
SPEAKER-RINGER SOCKET
TB 404
J-406
R-404 39K
R-405
TB-403
POWER SUPPLY
19 COND. R.C. SHIELDED
7 COND. R.C. SHIELDED

SUB	DESCRIPTION	APP VD	DATE	BY
8	ADDED OPERATION VOLTAGE	PM	4-10-53	RKF
9	CONNECTED R-202 FROM B+ TO SQUELCH B+	LP	5-28-53	//
10	REMOVED C-299 & C 282 WAS 82	TW	6-10-53	AN
11	CHANGED PIN NUMBERS 1ST & 2ND GRID, V-214	Wm	6-29-53	//
12	REVISE CHANNEL NUMBERS	EWM	11-6-53	NJD
13	R256 WAS 220K & R259 WAS 68K	LP	12-2-53	//
14	R259 WAS 220K AND ADDED R230 & NOTE 3	EWM	2-4-54	NJD



IFIER
C-207
6.0
02
Z-203
L-204
C-206
1.5
Z-202
C-204
4.7
L-203
1st R F AMPLIFIER
6BH6
V-201, XV-201
C-208
250
84V
R-206
560K
R-202
22K
1W
L-202
C-205
250
C-203
0.68
Z-201
L-201
C-201
250
ANTENNA
J-205
R-20
560K
C-292
.01UF
SECTION D REAR
SECTION C REAR
SECTION B REAR
SECTION A FRONT
S-201
CHAN 4
CHAN 5
CHAN 6
C-221
C-222
CHAN
SECTION
A
REAR
REC "B" B+
REC FIL.
REC B+
GND
REC B AF OUTPUT
P-201
T-213
AUDIO RETURN
AUDIO OUTPUT
TO STAND BY RELAY B+
SQUELCH B+
TO SQUELCH CONTROL

SUB	DESCRIPTION	APP'V'D	DATE	BY
7	CORRECTED TABLE 1	TW	2-17-53	NJD
6	ADD C-299	TW	1-19-53	FTM
5	ADD FREQ TABLE	PM	11-28-52	NJD
4	CONNECT S-201 TO P-201-12	PM	10-16-52	NJD
3	REVISED V-211 TUBE TYPE & ASS'N CKT & TRACED	PM	[illegible]	NJD
2	VALUES OF R 256 AND R-257 CORRECTED	CRF	[illegible]	CWC
1	REVISED CIRCUIT R-228 CHG VALUE C-289	CHF	6-1-50	CWC

MODEL ET-8040 VHF RADIOTELEPHONE
RECEIVER "A" SCHEMATIC

RADIOMARINE CORPORATION OF AMERICA

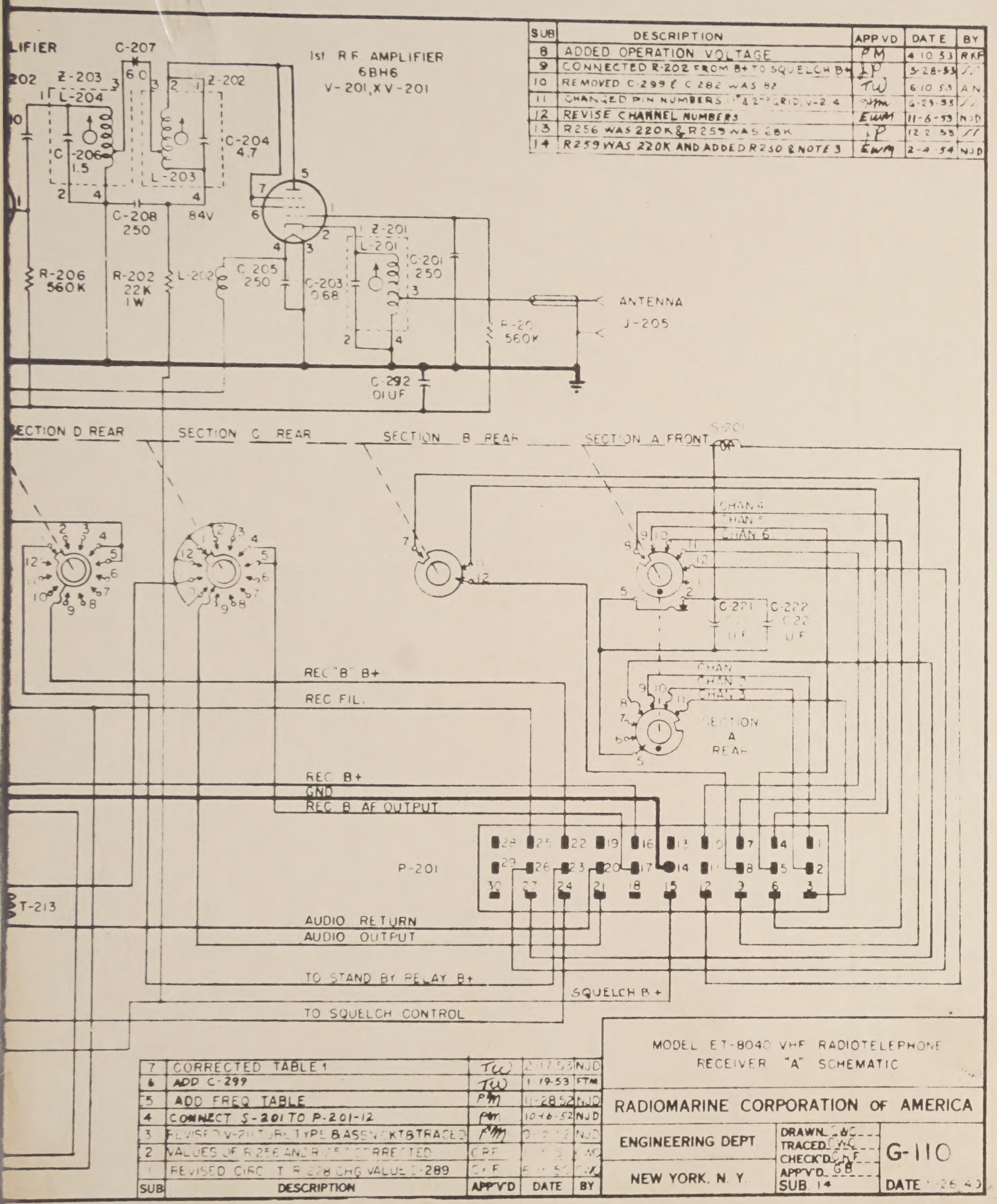
ENGINEERING DEPT.

NEW YORK, N. Y.

DRAWN CWC
TRACED CWC
CHECK'D CHF
APP'V'D GB
SUB. 14

G-110

DATE -26-49


1st R.F. AMPLIFIER
6BH6
V-201, XV-201
ANTENNA
J-205
SECTION D REAR
SECTION C REAR
SECTION B REAR
SECTION A FRONT
SECTION A REAR
S-201
REC "B" B+
REC FIL.
REC B+
GND
REC B AF OUTPUT
P-201
AUDIO RETURN
AUDIO OUTPUT
TO STAND BY RELAY B+
SQUELCH B+
TO SQUELCH CONTROL

SUB	DESCRIPTION	APP VD	DATE	BY
8	ADDED OPERATION VOLTAGE	PM	4-10-53	RKF
9	CONNECTED R-202 FROM B+ TO SQUELCH B+	LP	5-28-53	//
10	REMOVED C-299 & C 282 WAS 82	TW	6-10-53	AN
11	CHANGED PIN NUMBERS 1st & 2nd GRID, V-214	Hm	6-29-53	//
12	REVISE CHANNEL NUMBERS	EWM	11-6-53	NJD
13	R256 WAS 220K & R259 WAS 68K	LP	12-2-53	//
14	R259 WAS 220K AND ADDED R230 & NOTE 3	EWM	2-4-54	NJD

SUB	DESCRIPTION	APP'V'D	DATE	BY
7	CORRECTED TABLE 1	TW	2-17-53	NJD
6	ADD C-299	TW	1-19-53	FTM
5	ADD FREQ TABLE	PM	11-28-52	NJD
4	CONNECT S-201 TO P-201-12	PM	10-16-52	NJD
3	REVISED V-211 TUBE TYPE & ASS'N CKT & TRACED	PM	[illegible]	NJD
2	VALUES OF R 256 AND R-25[illegible] CORRECTED	CRF	[illegible]	[illegible]
1	REVISED CIRCUIT R 228 CHG VALUE C-289	CRF	[illegible]	CWC

MODEL ET-8040 VHF RADIOTELEPHONE
RECEIVER "A" SCHEMATIC

RADIOMARINE CORPORATION OF AMERICA

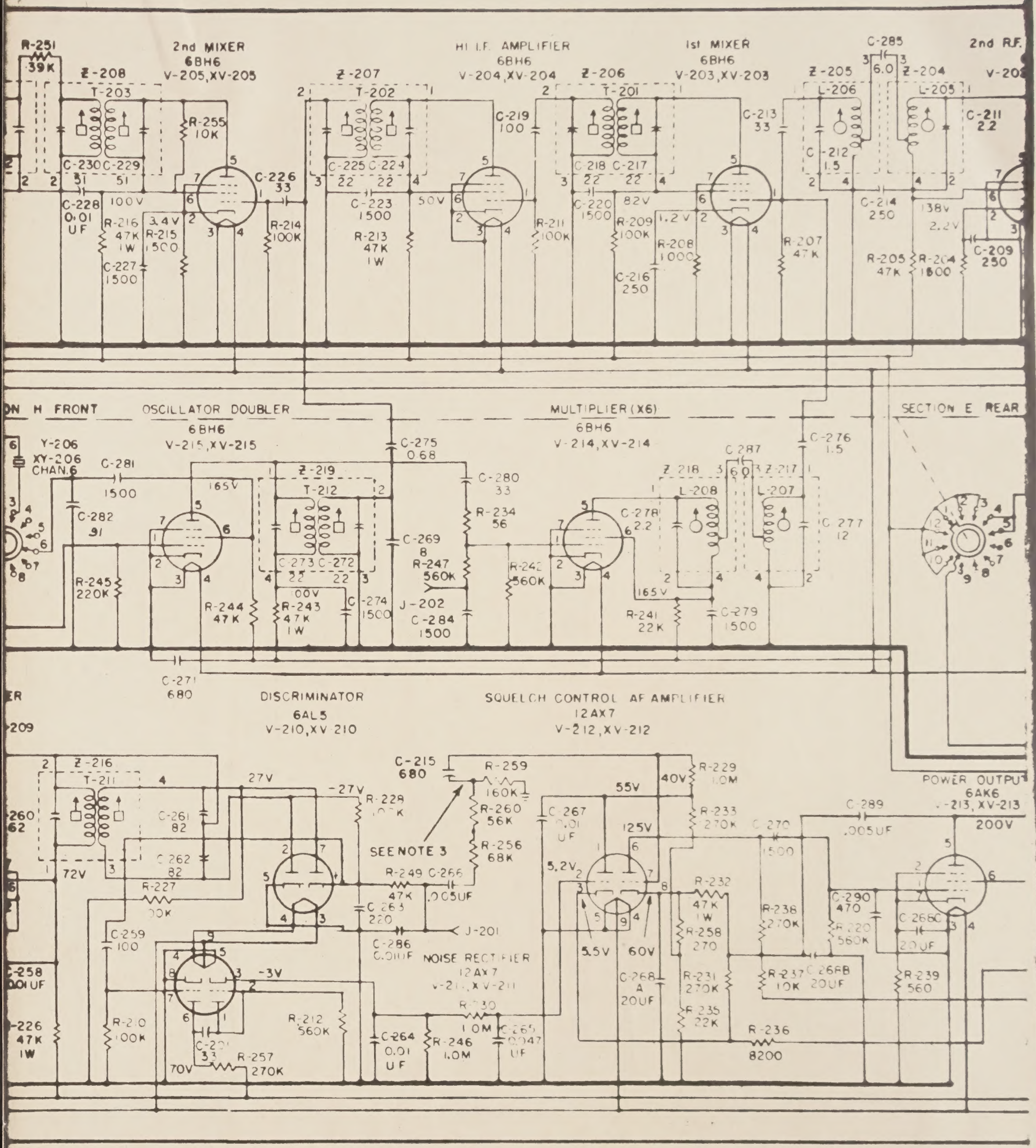
ENGINEERING DEPT.

NEW YORK, N. Y.

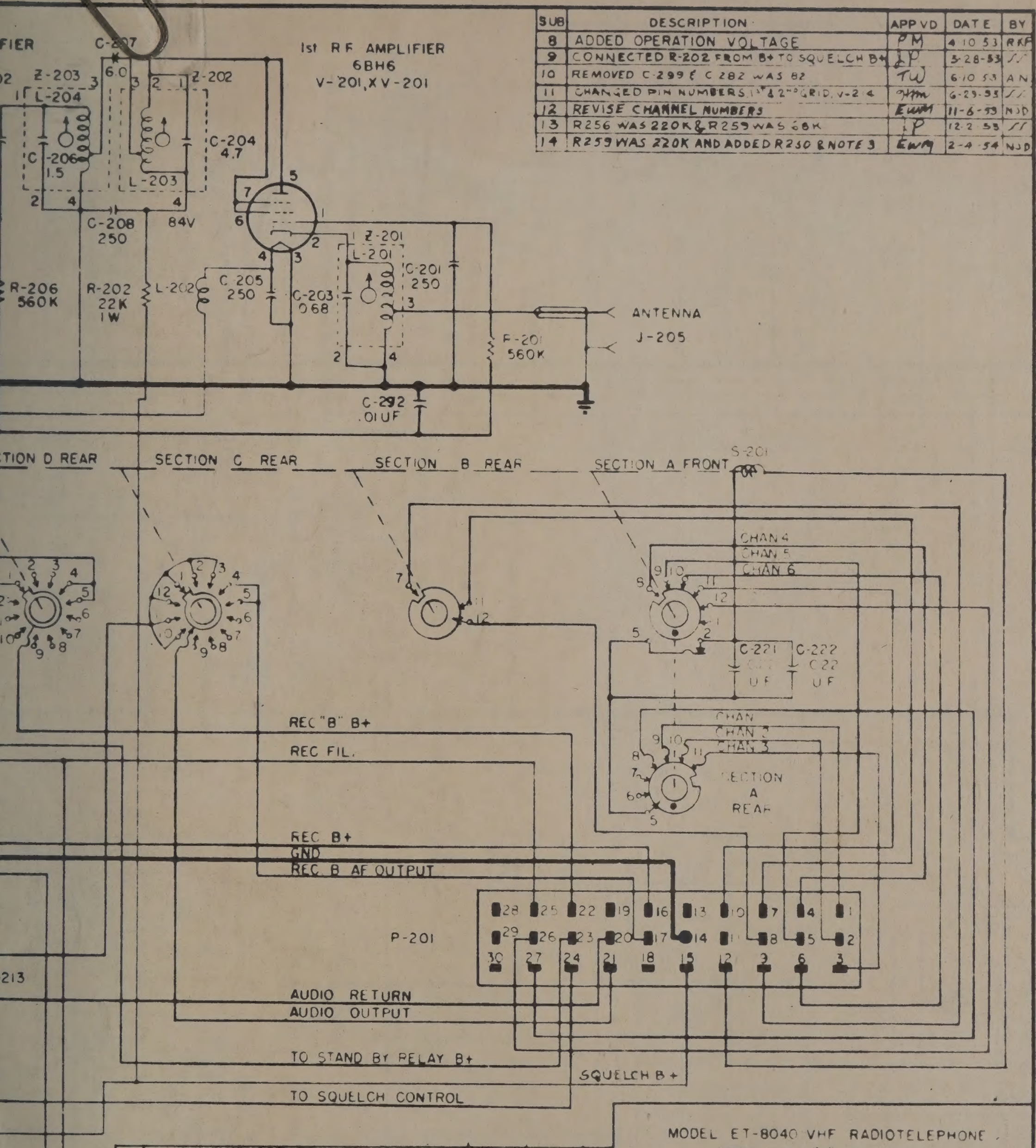
DRAWN CWC
TRACED CWC
CHECK'D CRF
APP'V'D GB
SUB. 14

G-110

DATE [illegible]-26-49


2nd MIXER
6BH6
V-205, XV-205
HI I.F. AMPLIFIER
6BH6
V-204, XV-204
1st MIXER
6BH6
V-203, XV-203
2nd R.F.
SECTION H FRONT
OSCILLATOR DOUBLER
6BH6
V-215, XV-215
MULTIPLIER (X6)
6BH6
V-214, XV-214
SECTION E REAR
Y-206
XY-206
CHAN. 6
DISCRIMINATOR
6AL5
V-210, XV-210
SQUELCH CONTROL AF AMPLIFIER
12AX7
V-212, XV-212
POWER OUTPUT
6AK6
V-213, XV-213
NOISE RECTIFIER
12AX7
V-211, XV-211
SEE NOTE 3
J-201
J-202

SUB	DESCRIPTION	APP VD	DATE	BY
8	ADDED OPERATION VOLTAGE	PM	4 10 53	RKF
9	CONNECTED R-202 FROM B+ TO SQUELCH B+	LP	5-28-53	//
10	REMOVED C-299 & C 282 WAS 82	TW	6-10 53	AN
11	CHANGED PIN NUMBERS 1st & 2nd GRID, V-214	JHm	6-29-53	//
12	REVISE CHANNEL NUMBERS	EWM	11-6-53	NJD
13	R256 WAS 220K & R259 WAS 68K	LP	12-2-53	//
14	R259 WAS 220K AND ADDED R250 & NOTE 3	EWM	2-4-54	NJD


FIER
C-207
6.0
Z-203
L-204
Z-202
C-206
1.5
C-204
4.7
L-203
1st R.F. AMPLIFIER
6BH6
V-201, XV-201
C-208
250
84V
R-206
560K
R-202
22K
1W
L-202
C-205
250
C-203
0.68
Z-201
L-201
C-201
250
R-201
560K
ANTENNA
J-205
C-292
.01UF
SECTION D REAR
SECTION C REAR
SECTION B REAR
SECTION A FRONT
S-201
CHAN 4
CHAN 5
CHAN 6
C-221
C-222
UF
UF
CHAN 1
CHAN 2
CHAN 3
SECTION
A
REAR
REC "B" B+
REC FIL.
REC B+
GND
REC B AF OUTPUT
P-201
213
AUDIO RETURN
AUDIO OUTPUT
TO STAND BY RELAY B+
SQUELCH B+
TO SQUELCH CONTROL

SUB	DESCRIPTION	APP'V'D	DATE	BY
7	CORRECTED TABLE 1	TW	2-17-53	NJD
6	ADD C-299	TW	1-19-53	FTM
5	ADD FREQ TABLE	PM	11-28-52	NJD
4	CONNECT S-201 TO P-201-12	PM	10-16-52	NJD
3	REVISED V-211 TUBE TYPE & ASSN CKT & TRACED	PM	[illegible]	NJD
2	VALUES OF R 256 AND R 257 CORRECTED	CPF	[illegible]	CWC
1	REVISED CIRCUIT R-228 CHG. VALUE C-289	ChF	[illegible]	CWC

MODEL ET-8040 VHF RADIOTELEPHONE
RECEIVER "A" SCHEMATIC

RADIOMARINE CORPORATION OF AMERICA

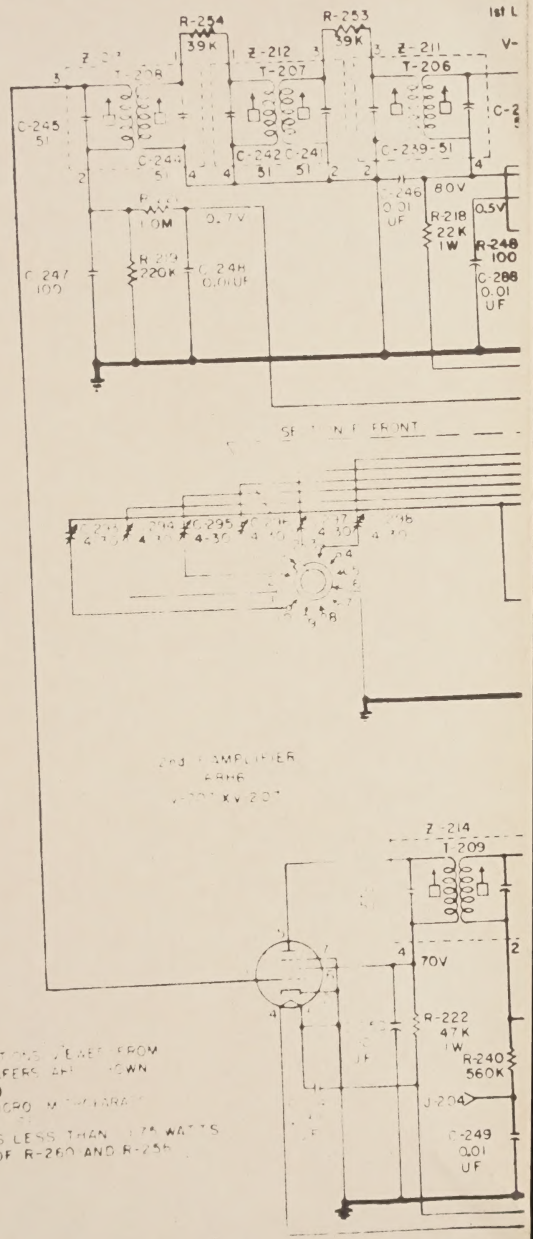
ENGINEERING DEPT.
NEW YORK, N. Y.

DRAWN CWC
TRACED CWC
CHECK'D ChF
APP'V'D GB
SUB. 14

G-110

DATE [illegible]-26-49

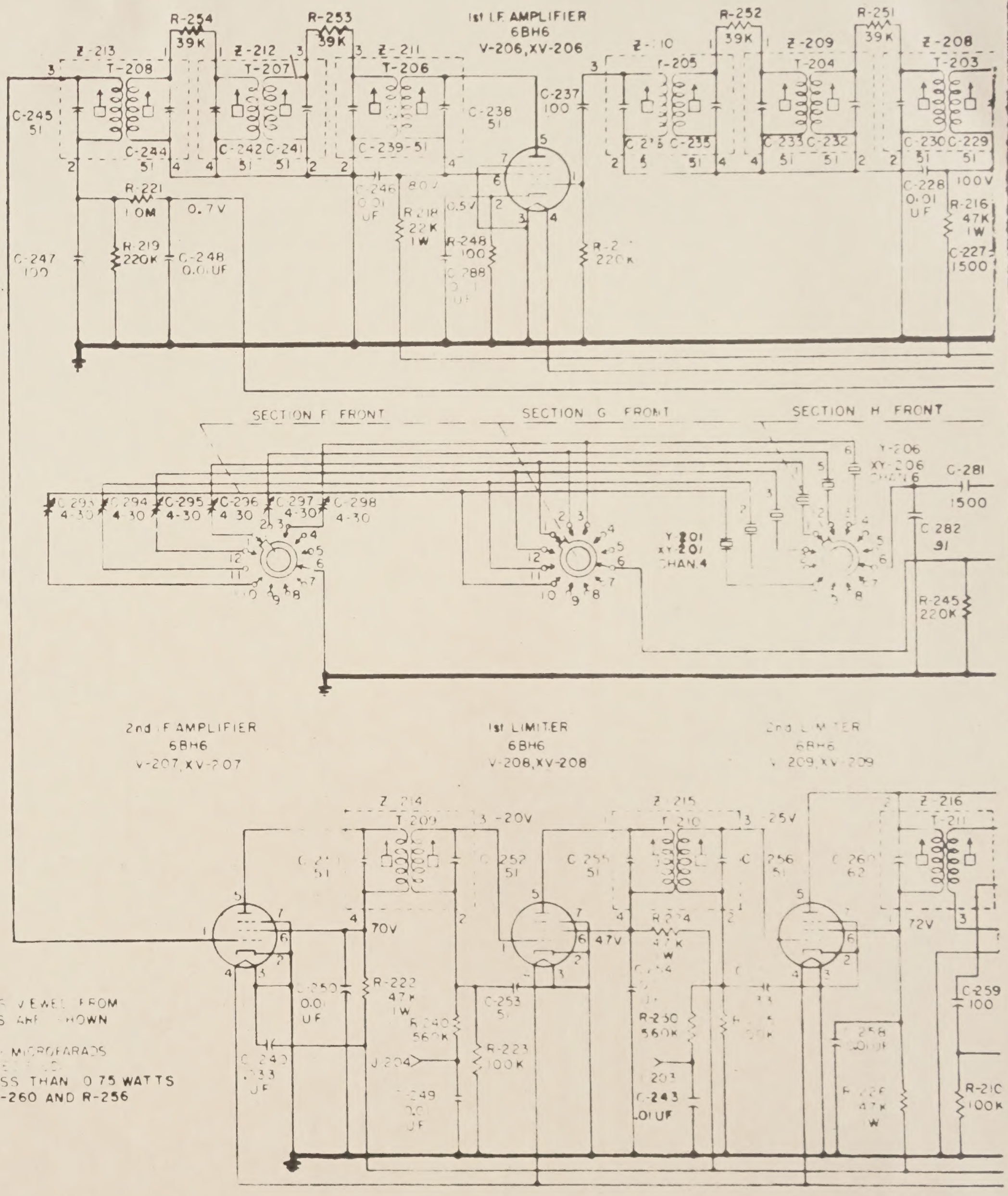
SWITCH POSITION	PUSH BUTTON NO	FREQ MC
4	1	[illegible]
[illegible]	2	[illegible]
3	3	[illegible]
1	4	[illegible]
5	5	157.0
6	X	156.5



R-254
39K
R-253
39K
1st I.F.
V-
Z-213
T-208
Z-212
T-207
Z-211
T-206
C-245
51
C-244
51
C-242
51
C-241
51
C-239-51
C-2
R-221
10M
0.7V
R-219
220K
C-248
0.01UF
C-247
100
C-246
0.01
UF
80V
R-218
22K
1W
0.5V
R-248
100
C-288
0.01
UF
SECTION F FRONT
C-295
4-30
2nd I.F. AMPLIFIER
6BH6
V-207,XV-207
Z-214
T-209
70V
R-222
47K
1W
R-240
560K
J-204
C-249
0.01
UF

NOTES
1 FRONT AND REAR WAFER SECTIONS VIEWED FROM SOLENOID END OF SWITCH WAFERS ARE SHOWN IN STAND BY (POSITION #4)
2 ALL VALUES EXPRESSED IN MICRO MICROFARADS AND OHMS UNLESS OTHERWISE SPECIFIED
3 IF AUDIO OUTPUT POWER IS LESS THAN 0.75 WATTS MOVE C-215 TO JUNCTION OF R-260 AND R-256

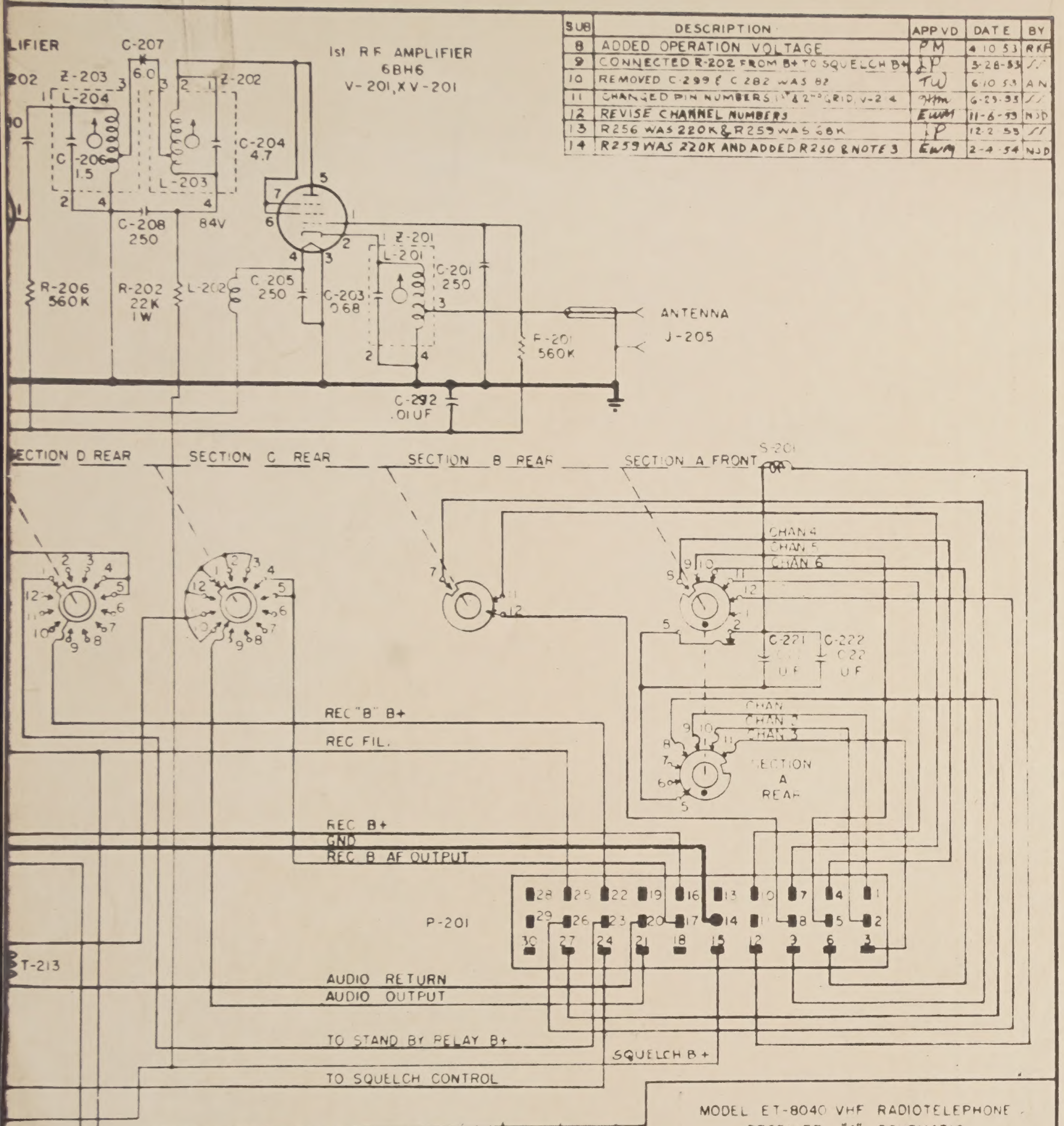
EQ
C
2
6
0
5



R-254
39K
R-253
39K
1st I.F. AMPLIFIER
6BH6
V-206,XV-206
R-252
39K
R-251
39K
Z-213
T-208
Z-212
T-207
Z-211
T-206
Z-210
T-205
Z-209
T-204
Z-208
T-203
C-245
51
C-244
51
C-242
51
C-241
51
C-239-51
C-238
51
C-237
100
C-235
51
C-233
51
C-232
51
C-230
51
C-229
51
C-228
0.01
UF
100V
R-216
47K
1W
C-227
1500
R-221
10M
0.7V
R-219
220K
C-248
0.01UF
C-247
100
C-246
0.01
UF
80V
R-218
22K
1W
0.5V
R-248
100
C-288
220K
SECTION F FRONT
SECTION G FRONT
SECTION H FRONT
C-293
4-30
C-294
4-30
C-295
4-30
C-296
4-30
C-297
4-30
C-298
4-30
Y-201
XY-201
CHAN 4
Y-206
XY-206
CHAN 6
C-281
1500
C-282
91
R-245
220K
2nd I.F. AMPLIFIER
6BH6
V-207,XV-207
1st LIMITER
6BH6
V-208,XV-208
2nd LIMITER
6BH6
V-209,XV-209
Z-214
T-209
Z-215
T-210
Z-216
T-211
-20V
25V
70V
47V
72V
C-251
51
C-252
51
C-255
51
C-256
51
C-260
62
C-250
0.01
UF
R-222
47K
1W
R-240
560K
C-253
51
R-223
100K
J-204
C-240
.033
UF
C-249
0.01
UF
R-224
47K
1W
R-250
560K
J-203
C-243
.01UF
C-258
.01UF
R-226
47K
W
C-259
100
R-210
100K

AFER SECTIONS VIEWED FROM
WITCH WAFERS ARE SHOWN
TION # 4)
SED IN MICRO MICROFARADS
OTHERWISE SPECIFIED
POWER IS LESS THAN 0.75 WATTS
NCTION OF R-260 AND R-256

SUB	DESCRIPTION	APP VD	DATE	BY
8	ADDED OPERATION VOLTAGE	PM	4 10 53	RKF
9	CONNECTED R-202 FROM B+ TO SQUELCH B+	JP	3-28-53	//
10	REMOVED C-299 & C 282 WAS 82	TW	6-10-53	AN
11	CHANGED PIN NUMBERS 1ST & 2ND GRID, V-214	Hm	6-25-53	//
12	REVISE CHANNEL NUMBERS	EWM	11-6-53	NJD
13	R256 WAS 220K & R259 WAS 68K	JP	12-2-53	//
14	R259 WAS 220K AND ADDED R230 & NOTE 3	EWM	2-4-54	NJD


LIFIER
C-207
6.0
1st RF AMPLIFIER
6BH6
V-201, XV-201
202
Z-203
L-204
C-206
1.5
Z-202
C-204
4.7
L-203
C-208
250
84V
R-206
560K
R-202
22K
1W
L-202
C-205
250
C-203
.068
Z-201
L-201
C-201
250
ANTENNA
J-205
R-201
560K
C-292
.01 UF
SECTION D REAR
SECTION C REAR
SECTION B REAR
SECTION A FRONT
S-201
CHAN 4
CHAN 5
CHAN 6
C-271
C-272
UF
CHAN
CHAN 2
CHAN 3
SECTION
A
REAR
REC "B" B+
REC FIL.
REC B+
GND
REC B AF OUTPUT
P-201
T-213
AUDIO RETURN
AUDIO OUTPUT
TO STAND BY RELAY B+
SQUELCH B+
TO SQUELCH CONTROL

MODEL ET-8040 VHF RADIOTELEPHONE
RECEIVER "A" SCHEMATIC

RADIOMARINE CORPORATION OF AMERICA

ENGINEERING DEPT.

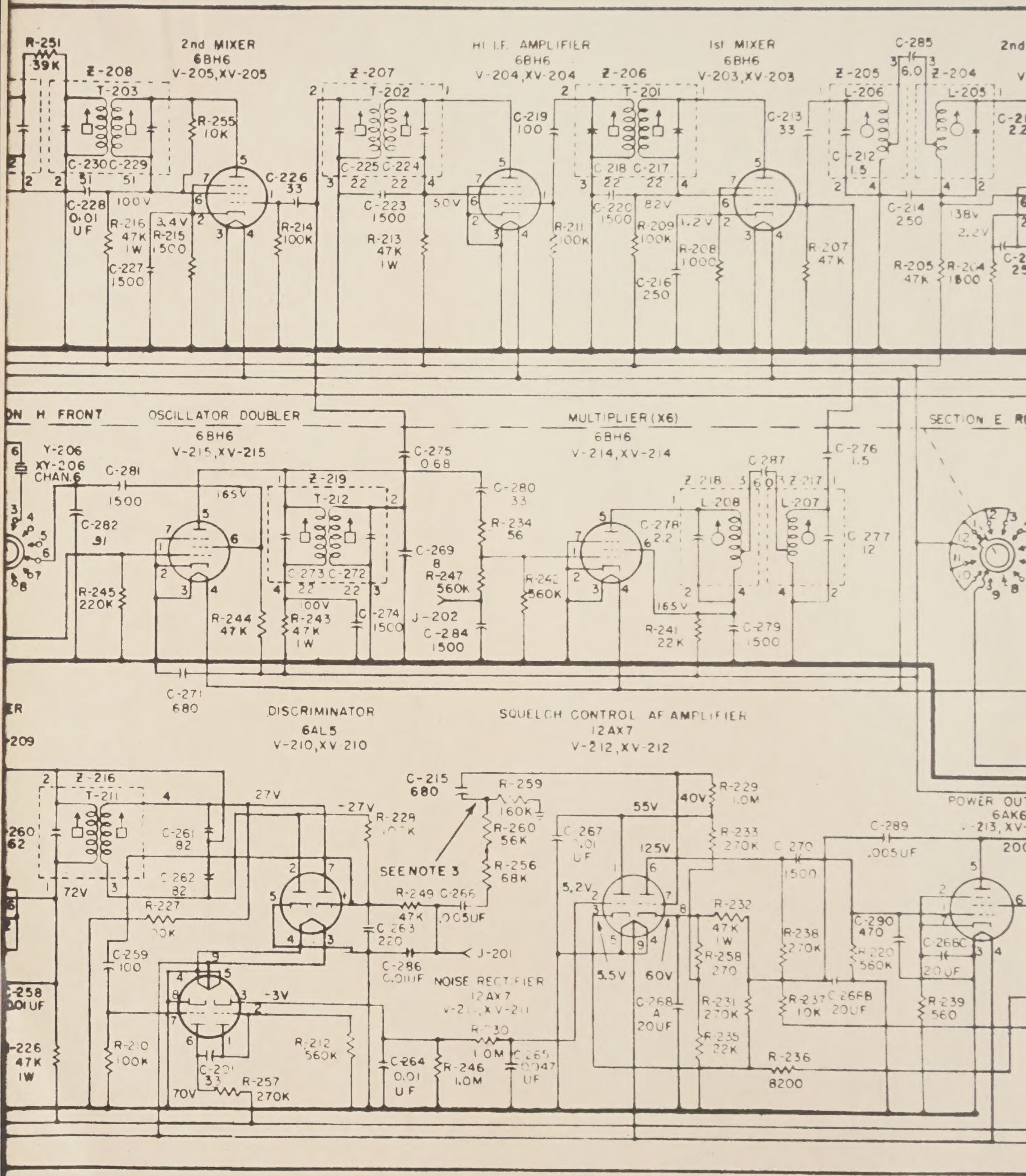
NEW YORK, N. Y.

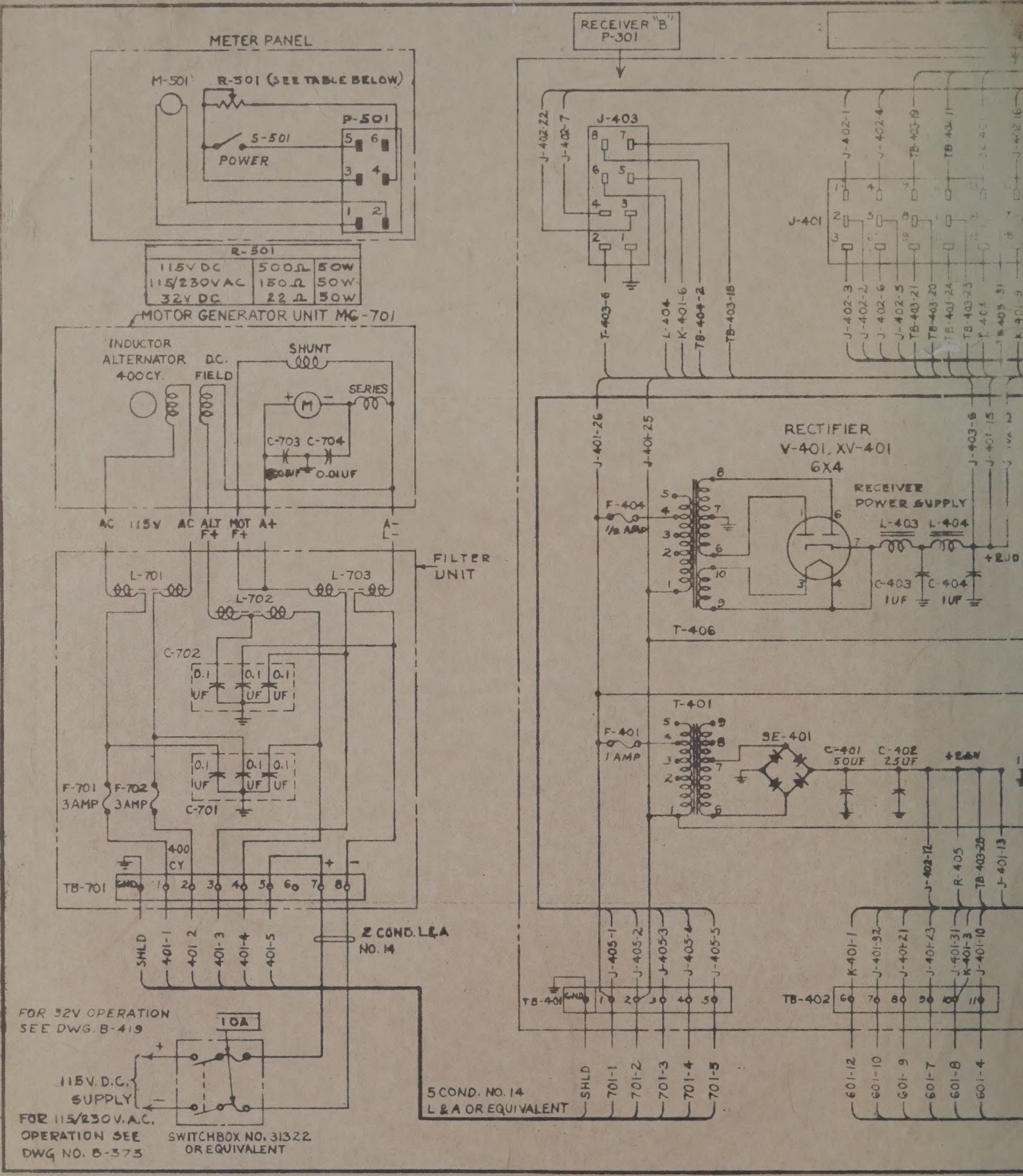
DRAWN CWC
TRACED CWC
CHECK'D ChF
APP'V'D GB
SUB. 14

G-110

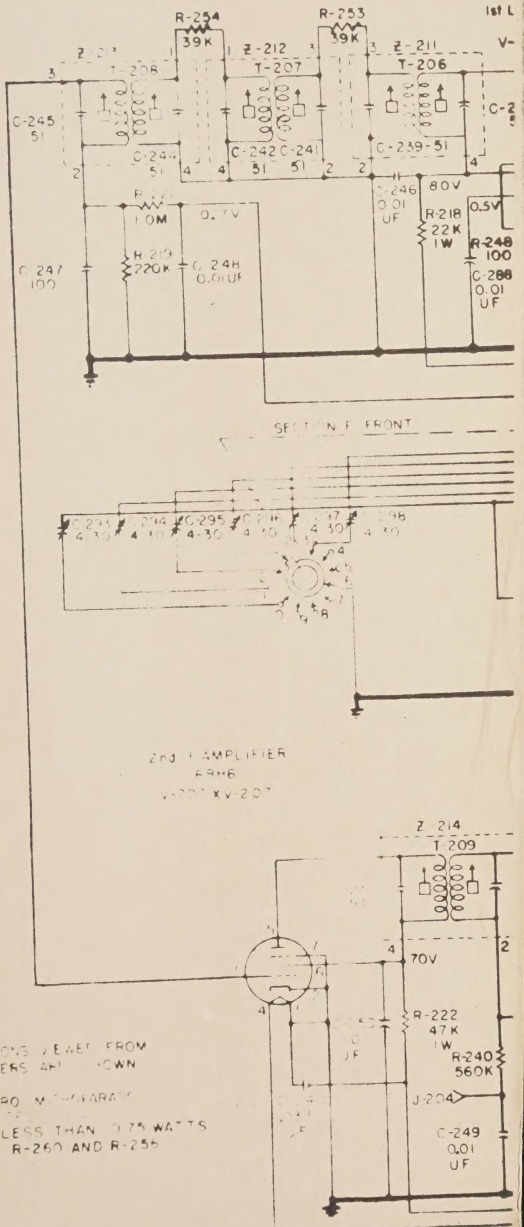
DATE [illegible]-26-49

SUB	DESCRIPTION	APP'V'D	DATE	BY
7	CORRECTED TABLE 1	TW	2-17-53	NJD
6	ADD C-299	TW	1-19-53	FTM
5	ADD FREQ TABLE	PM	11-28-52	NJD
4	CONNECT S-201 TO P-201-12	PM	10-16-52	NJD
3	REVISED V-211 TUBE TYPE & ASS'N CKT & TRACED	PM	[illegible]	NJD
2	VALUES OF R 256 AND R-25[illegible] CORRECTED	CPF	[illegible]	CWC
1	REVISED CIRCUIT R-228 CHG VALUE C-289	ChF	[illegible]	CWC


R-251
39K
2nd MIXER
6BH6
V-205, XV-205
Z-208
T-203
R-255
10K
C-230
51
C-229
51
C-228
0.01
UF
100V
R-216
47K
1W
3.4V
R-215
1500
C-227
1500
C-226
33
R-214
100K
Z-207
T-202
C-225
22
C-224
22
C-223
1500
R-213
47K
1W
50V
HI I.F. AMPLIFIER
6BH6
V-204, XV-204
C-219
100
R-211
100K
Z-206
T-201
C-218
22
C-217
22
C-220
1500
82V
R-209
100K
1.2V
R-208
1000
C-216
250
1st MIXER
6BH6
V-203, XV-203
C-213
33
R-207
47K
C-285
6.0
Z-205
L-206
C-212
1.5
Z-204
L-205
C-214
250
138V
2.2V
R-205
47K
R-204
1800
2nd
H FRONT
OSCILLATOR DOUBLER
6BH6
V-215, XV-215
Y-206
XY-206
CHAN. 6
C-281
1500
C-282
91
165V
R-245
220K
R-244
47K
Z-219
T-212
C-273
22
C-272
22
100V
R-243
47K
1W
C-274
1500
C-275
0.68
C-269
8
R-247
560K
J-202
C-284
1500
C-280
33
R-234
56
MULTIPLIER (X6)
6BH6
V-214, XV-214
R-242
560K
C-278
2.2
Z-218
L-208
C-287
6.0
Z-217
L-207
C-276
1.5
C-277
12
165V
R-241
22K
C-279
1500
SECTION E R
C-271
680
DISCRIMINATOR
6AL5
V-210, XV 210
SQUELCH CONTROL AF AMPLIFIER
12AX7
V-212, XV-212
POWER OUT
6AK6
V-213, XV-
209
Z-216
T-211
260
62
72V
C-261
82
C-262
82
27V
-27V
R-228
C-215
680
R-259
160K
R-260
56K
R-256
68K
SEE NOTE 3
R-227
10K
R-249
47K
C-266
.005UF
C-263
220
J-201
C-267
.01
UF
55V
40V
125V
5.2V
5.5V
60V
R-229
1.0M
R-233
270K
C-270
1500
C-289
.005UF
C-258
.001UF
C-259
100
-3V
C-286
0.01UF
NOISE RECTIFIER
12AX7
V-211, XV-211
R-230
1.0M
C-265
0.047
UF
R-226
47K
1W
R-210
100K
R-212
560K
C-264
0.01
UF
R-246
1.0M
C-268
A
20UF
R-232
47K
1W
R-258
270
R-231
270K
R-235
22K
R-238
270K
R-237
10K
C-268
B
20UF
R-220
560K
C-290
470
C-266
20UF
R-239
560
R-236
8200
C-201
33
R-257
270K
70V


METER PANEL
M-501
R-501 (SEE TABLE BELOW)
P-501
S-501
POWER
MOTOR GENERATOR UNIT MG-701
INDUCTOR ALTERNATOR 400CY.
D.C. FIELD
SHUNT
SERIES
M
C-703 C-704
0.01UF
AC 115V AC ALT F+ MOT F+ A+ A- L-
FILTER UNIT
L-701
L-702
L-703
C-702
0.1 UF
C-701
F-701 3AMP
F-702 3AMP
400 CY
TB-701
GND
SHLD
401-1
401 2
401-3
401-4
401-5
2 COND. L&A NO. 14
FOR 32V OPERATION SEE DWG. B-419
10A
115V. D.C. SUPPLY
FOR 115/230V.A.C. OPERATION SEE DWG NO. B-373
SWITCHBOX NO. 31322 OR EQUIVALENT
5 COND. NO. 14 L & A OR EQUIVALENT
701-1
701-2
701-3
701-4
701-5
RECEIVER "B" P-301
J-403
J-402-22
J-402-7
T-403-6
L-404
K-401-6
TB-404-2
TB-403-18
J-401
J-402-1
J-402-4
TB-403-19
TB-402-11
J-402-3
J-402-2
J-402-6
J-402-5
TB-403-21
TB-403-20
TB-403-24
TB-403-23
J-401-26
J-401-25
RECTIFIER V-401, XV-401 6X4
RECEIVER POWER SUPPLY
F-404 1/2 AMP
L-403
L-404
C-403 1UF
C-404 1UF
+B/JD
J-403-6
J-401-15
T-406
T-401
F-401 1 AMP
SE-401
C-401 50UF
C-402 25UF
+24V
J-402-12
R-405
TB-403-28
J-401-13
TB-401
GND
J-405-1
J-405-2
J-405-3
J-405-4
J-405-5
TB-402
K-401-1
J-401-32
J-401-21
J-401-23
J-401-31
K-401-3
J-401-10
601-12
601-10
601-9
601-7
601-8
601-4

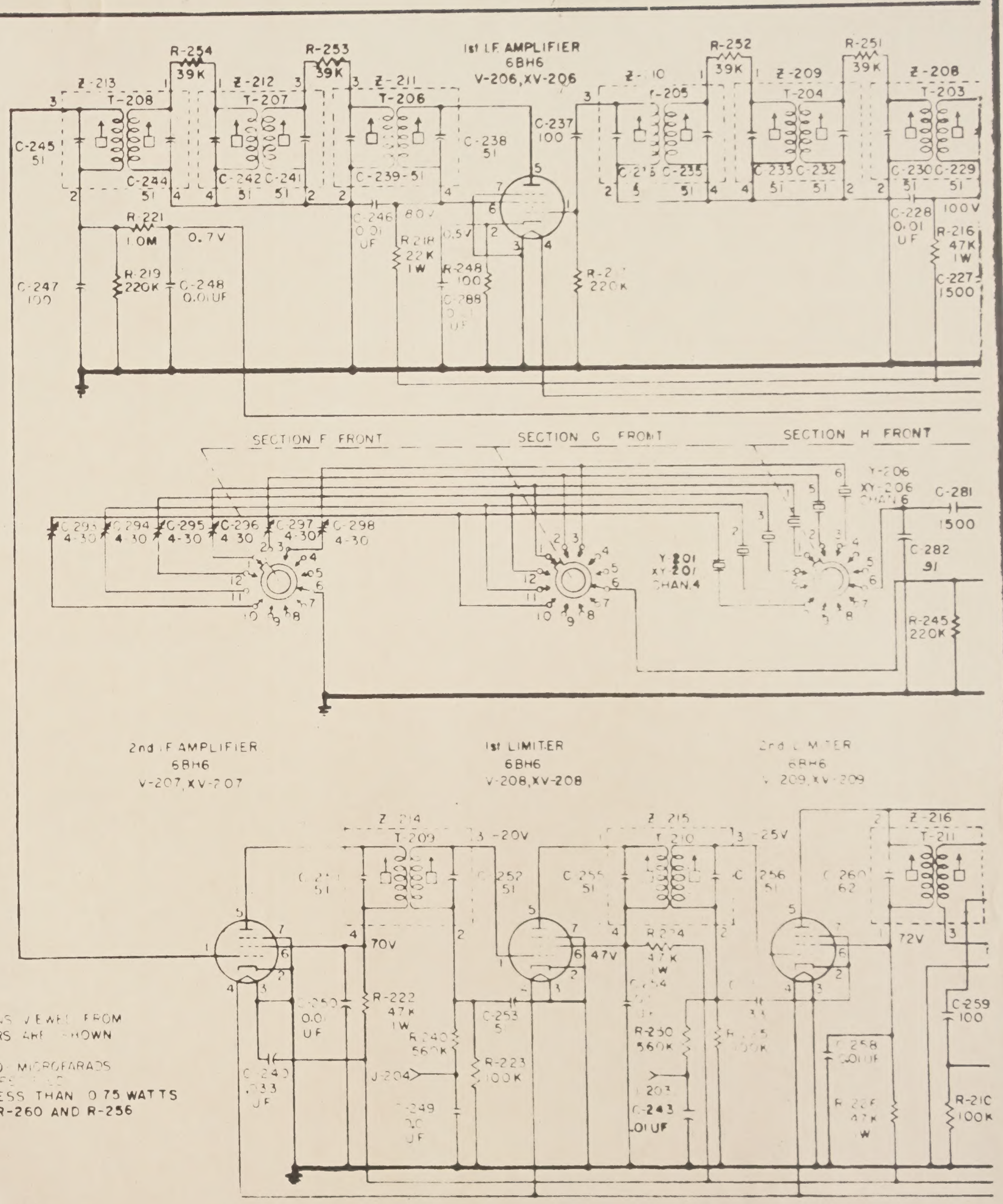
R-501		
115V DC	500Ω	50W
115/230V AC	150Ω	50W
32V DC	22Ω	50W


R-254
39K
R-253
39K
1st I
Z-213
T-208
Z-212
T-207
Z-211
T-206
C-245
51
C-244
51
C-242
C-241
51
51
C-239-51
R-221
1.0M
0.7V
R-219
220K
C-248
0.01UF
C-247
100
C-246
0.01
UF
80V
R-218
22K
1W
0.5V
R-248
100
C-288
0.01
UF
SECTION F FRONT
C-293
4-30
C-294
4-30
C-295
4-30
C-296
4-30
C-297
4-30
C-298
4-30
2nd I F AMPLIFIER
6BH6
V-207,XV-207
Z-214
T-209
70V
R-222
47K
1W
R-240
560K
J-204
C-249
0.01
UF

SWITCH POSITION	PUSH BUTTON NO	FREQ MC
4	1	[illegible]
[illegible]	2	[illegible]
3	3	[illegible]
1	4	156.8
5	5	157.0
6	X	156.5

NOTES
1 FRONT AND REAR WAFER SECTIONS VIEWED FROM SOLENOID END OF SWITCH WAFERS ARE SHOWN IN STAND BY (POSITION #4)
2 ALL VALUES EXPRESSED IN MICRO MICROFARADS AND OHMS UNLESS OTHERWISE SPECIFIED
3 IF AUDIO OUTPUT POWER IS LESS THAN 0.75 WATTS MOVE C-215 TO JUNCTION OF R-260 AND R-256

EQ C
[illegible]
[illegible]
2
6
0
5


R-254
39K
R-253
39K
1st I.F. AMPLIFIER
6BH6
V-206,XV-206
R-252
39K
R-251
39K
Z-213
T-208
Z-212
T-207
Z-211
T-206
Z-210
T-205
Z-209
T-204
Z-208
T-203
C-245
51
C-244
51
C-242
C-241
51
51
C-239-51
C-238
51
C-237
100
C-235
51
C-233
C-232
51
51
C-230
C-229
51
51
C-228
0.01
UF
100V
R-216
47K
1W
C-227
1500
R-221
1.0M
0.7V
R-219
220K
C-248
0.01UF
C-247
100
C-246
0.01
UF
80V
R-218
22K
1W
0.57
R-248
100
C-288
R-217
220K
SECTION F FRONT
SECTION G FRONT
SECTION H FRONT
C-293
4-30
C-294
4-30
C-295
4-30
C-296
4-30
C-297
4-30
C-298
4-30
Y-201
XY-201
CHAN.4
Y-206
XY-206
CHAN.6
C-281
1500
C-282
91
R-245
220K
2nd I.F AMPLIFIER
6BH6
V-207,XV-207
1st LIMITER
6BH6
V-208,XV-208
2nd LIMITER
6BH6
V-209,XV-209
Z-214
T-209
-20V
Z-215
T-210
-25V
Z-216
T-211
C-252
51
C-255
51
C-256
51
C-260
62
70V
47V
72V
R-222
47K
1W
R-240
560K
R-223
100K
J-204
C-249
0.01
UF
C-250
0.01
UF
C-253
5
R-224
47K
1W
R-250
560K
C-243
.01UF
C-258
.001UF
R-226
47K
1W
R-210
100K
C-259
100

AFER SECTIONS VIEWED FROM
WITCH. WAFERS ARE SHOWN
TION #4)
SED IN MICRO MICROFARADS
OTHERWISE SPECIFIED
POWER IS LESS THAN 0.75 WATTS
NCTION OF R-260 AND R-256